

Spring 2015

Washington's Fish Consumption Rate and Water Quality Standards: Fostering Allies to Keep Our Seafood Clean

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WASHINGTON'S FISH CONSUMPTION RATE
AND WATER QUALITY STANDARDS:
FOSTERING ALLIES TO KEEP OUR SEAFOOD CLEAN

A Thesis
Presented to
The Graduate Faculty
Central Washington University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Resource Management

by
Tiffany Jean Waters

June 2015

CENTRAL WASHINGTON UNIVERSITY

Graduate Studies

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ABSTRACT

WASHINGTON'S FISH CONSUMPTION RATE AND WATER QUALITY STANDARDS: FOSTERING ALLIES TO KEEP OUR SEAFOOD CLEAN

by

Tiffany Jean Waters

June 2015

Washington State's current fish consumption rate and water quality standards update has been a highly contentious public policy debate between Washington State tribes, the State of Washington's Department of Ecology, the Federal Environmental Protection Agency, and many prominent Washington State industries. Environmental groups and Washington tribes have partnered in the Keep Our Seafood Clean Coalition to educate the public on the need for increasing water quality standards to protect tribal and public health. My research includes analyzing Washington's tribal/State agency co-management relationships, the water quality standards history and current criteria, and the narratives of the public debate; and conducting interviews to assess the knowledge base and opinions of the fish and shellfish industry members toward the fish consumption rate and water quality standards update and the potential of this industry to advocate for higher water quality standards. The fish and shellfish industry members hold widely diverse opinions of the fish consumption rate and water quality standards update with certain subcategories and age groups more likely than others to believe there is a need for higher water quality standards.

ACKNOWLEDGMENTS

My everlasting thanks, appreciation, and love goes to my amazing family – my parents, sister, brother, grandma, aunts, uncles, and Kate – who are my foundation. Both your unspoken (during the difficult years when I didn't want to talk about my thesis) and vocal (during the productive years when I couldn't stop talking about my thesis) support was essential to my success. My success is your success.

Incredible thanks to the staff at the Northwest Indian Fisheries Commission, who freely shared their information and passion for this issue. Particular thanks and appreciation goes to Dietrich Schmitt, who provided unconditional support and an essential flexibility in my work schedule so that I could take leave and dash off on a moment's notice to conduct an interview. Big ups to Emmett O'Connell, who was the inspiration for this topic, was my intellectual road dog throughout, and even tolerated me invading work / his quiet time an hour early every morning to write.

Thank you to my committee! Your knowledge, constructive edits, support, and enthusiasm for my work and writing was instrumental. Any student would be and is lucky to be able to draw from such expertise.

Last, but not least, Sarah “Silverclaw” Oosahwee-Voss, I couldn't have done this without you. You paved the way and pushed me on with your enthusiasm, humor, and friendship. I'm so excited and grateful that we finished this together.



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CHAPTER I

INTRODUCTION

Problem and Purpose

Since 2011, a public debate over Washington State's water quality standards has been raging between Washington State tribes, the State of Washington's Department of Ecology (Ecology), the Federal Environmental Protection Agency (EPA), and many prominent Washington State industries. A basis for all water quality standards is the Federal 1972 Clean Water Act, which famously decreed that public waters should be fishable and swimmable. This legislation, administered by the EPA, established the need for all states to adopt water quality standards that would protect human health. By 1992 though, 14 states, including Washington, still had not adopted their own state-specific human health criteria and associated water quality standards. The EPA then exercised its Clean Water Act authority and set minimum Federal standards for all remaining states (the National Toxics Rule, 1992). Since then the EPA, as the ultimate regulatory authority responsible for the review and approval of all state and tribal water quality standards, has continued to encourage states that were forced to adopt the minimum National Toxics Rule standards to instead set their own standards for human health criteria and toxics control that use more accurate state-specific data (Washington State Department of Ecology, WDOE, 2013b). Still operating under the minimum standards set by the National Toxics Rule, Washington has finally embarked on the task of creating its own state-specific human health criteria and water quality standards, but it is a process that has been highly contested.

The fish consumption rate, a previously obscure kernel of the human health criteria, rose in notoriety to become a focal point of this debate. A fish consumption rate is controversial not as a concept alone (the estimated amount of fish and shellfish eaten daily), but in its exact definition and application, as Ecology is defining and using Washington's fish consumption rate, in conjunction with other factors, to determine what will constitute Washington's updated surface water quality standards (Northwest Indian Fisheries Commission, NWIFC, 2012a). Many Washingtonians, including tribes and environmental groups, argue that the inaccurate fish consumption rate has resulted in water quality and contaminated sediment standards that are too low and not protective of Washingtonian health, and thus do not meet the requirements of the Clean Water Act. Ecology has acknowledged that Washington's current fish consumption rate for surface water quality standards of 6.5 grams or roughly half an oyster a day (based on a national average of fish and non-fish consumers) is an inaccurate rate for Washington (WDOE, 2011a).

In revising water quality standards, Ecology is working toward the adoption of Washington-specific human health criteria, which would include a potentially higher, more accurate fish consumption rate (WDOE, n.d.f). The adoption of a higher fish consumption rate could in turn raise Washington's water quality standards that impact toxicity levels in water and seafood. However, as this debate has progressed, other factors within the human health criteria have been highlighted and hold the potential to undercut an increased fish consumption rate, greatly influencing the level of water quality standard protection. In this public stage of rulemaking, Washington State agencies, tribes,

industries, and stakeholders are advancing contesting narratives of the issue, each competing for control over the official discourse and rulemaking.

In this thesis, I present the history of water quality management and the current regulatory power structure in Washington State as a backdrop and context for the current public debate raging over what constitutes and who has control over Washington's water quality. Using the theory of political ecology, I characterize the contesting public positions and narratives of the debate over fish consumption rates, the suite of human health criteria, and the associated water quality standards. Industry groups, such as Boeing and Association of Washington Businesses (AWB), are highly invested in this process due to fear that higher water quality standards could increase operating costs and reduce profits. Washington tribes are invested in this process due to subsistence, cultural, and economic lifeways that are heavily dependent on fish and shellfish. Due to fears of seafood and water contamination, Washington tribes and environmental groups have partnered and are focusing on a collaborative framework of coalition building as a tool to obtain more stringent water quality standards. However, despite (or perhaps because of) a vested economic interest in water and seafood quality, the voices of the fish and shellfish industries have been generally absent from this public policymaking stage. My research questions are: What is their knowledge of Washington's water quality standards and the fish consumption rate; and what are their opinions? Finally, what are the potentials for and/or barriers to them entering into partnership with tribal and environmental groups in a public outreach and education campaign to encourage adoption of higher fish consumption rate and more stringent water quality standards?

Through this research, I explore the political landscape of Washington's water quality arena and assess the potential utility of actively engaging members of the fish and shellfish industries in a coalition to elicit higher waters quality standards that will further protect fish, shellfish, and human health. The revision of Washington's water quality standards has been a long process, marked by both collaboration and discord, but also by the absence of potentially significant voices. One of my purposes with this thesis is to address the information gap pertaining specifically to the perspectives of fish and shellfish industries by interviewing members of these groups, including the wholesale, retail, and restaurant sectors, for their knowledge and views of the fish consumption rate and the water quality standards update. A wide array of Washingtonians market in and consume large quantities of fish and shellfish, making the rate revision a broad issue that has the potential to unite both the tribal and non-tribal public and members of the fish and shellfish industries.

Background to the Northwest Indian Fisheries Commission and Keep Our Seafood Clean Coalition

This current situation and debate reflects a recent change of course on the part of Ecology as they were working with Washington tribes and the Northwest Indian Fisheries Commission (NWIFC), an inter-tribal support organization for 20 "treaty tribes" in Western Washington¹, from 2010 to 2011 to update both the revised surface water quality standards and sediment management standards for contaminated site cleanup by

¹ The 20 'treaty tribes' in Western Washington are tribes whose treaty rights to the salmon resource were reaffirmed in the 1974 *U.S. v. Washington* court case, better known as the Boldt Decision. The Boldt Decision and future court cases established NWIFC member tribes as co-managers with the State of Washington of Washington State's salmon resources, as well as reaffirmed tribal shellfish harvesting rights and an environmental right to protect salmon habitat (NWIFC, n.d.).

identifying a more accurate fish consumption rate that would be acceptable to tribal members. After reviewing and compiling information regarding Washington's fish consumption rate, including many tribal fish consumption rate surveys, Ecology produced and released a Fish Consumption Technical Document (Technical Document) in winter 2011 that contained a recommended fish consumption rate of 150 to 275 grams/day (WDOE, 2011, p.111). This was largely heralded as an important first step by many Washington tribes (Frank, 2012c). However, a strong backlash to the technical document occurred from industry, particularly The Boeing Company (Boeing), a local Washington business of juggernaut proportions and influence. In addition to discussions and interactions with Ecology, Boeing lobbied then Washington State Governor Christine Gregoire that the revised fish consumption rate and subsequent higher standards would cost the company millions and hinder the expansion of production in the State (McClure, 2013). After an intensive commenting period from the industry and public, Ecology made a significant shift in direction in summer 2012 and determined that they would instead be:

1. reviewing and adopting revised sediment management standards *without* using an updated fish consumption rate;
2. revising the Technical Document to *remove* the recommended fish consumption rate range;
3. continuing to encapsulate the fish consumption rate within a human health criteria for inclusion in the water quality standards; and
4. *slowing* the rulemaking schedule (despite their assertions to the contrary) for revised water quality standards, such that a draft rule would not be released until fall 2013 (Sturdevant, 2012a; WDOE, 2013a). With the exception of the continuation of the human health criteria process, Tribes and NWIFC adamantly

disagreed with this process revision/delay and engaged in a shift of their own, refusing to participate in Ecology's elongated process (Schrader, 2012).

No longer confident in Ecology's process or purported future results, Tribes and NWIFC are currently engaged in a multi-pronged strategy to advance higher water quality standards by advocating the incorporation of an accurate fish consumption rate into the human health criteria. Portions of this strategy include consulting with and asking for action from their trustee, the Federal Government; approaching industry to determine barriers to their support; and engaging in a public outreach and education campaign to build partnerships and educate the public. NWIFC's current public outreach and education campaign, "Keep Our Seafood Clean Coalition," includes partnerships with the environmental agencies of People for Puget Sound, Puget Sound Keeper Alliance, and Resources for Sustainable Communities. However, while environmental agency support is important and valued, NWIFC has discussed that a strong coalition that includes industry is critical to the success of this public outreach and education campaign.

As part of the original consultation process with NWIFC and Washington tribes, Ecology subawarded internal and EPA funding to NWIFC to conduct tribal and stakeholder outreach and determine a State fish consumption rate acceptable to NWIFC member tribes. NWIFC conducted outreach to tribes, local industry and stakeholders, and coordinated with Ecology. NWIFC's final report for this contract provided needed next steps to follow Ecology's revised process and approach. Taking into account the strong suite of responses that arose to Ecology's first Technical Document, NWIFC's final Fish Consumption Rates Report (2012a) identified "a need for more public information on fish consumption rates – what they are, how they are calculated and how protective levels

benefit fish consumers” (p.10). The report also identifies necessary next steps, stating that “[t]ribes will need materials and personnel to initiate or respond to requests for public information, respond to misinformation on the scientific accuracy of tribal studies, and participate in rule-making processes through the transition in administrations” (p.10). In addition to the public information needs identified within the report to Ecology, NWIFC personnel identified the need to build partnerships to further convey this information and educate the public.

Continuing in this vein, NWIFC staff has approached various industries in Washington State, focusing on education and determining specific barriers to their support for a revised fish consumption rate. However, their current approach has not officially included the fish and shellfish industry. As part of the initial tribal and stakeholder outreach in 2011, NWIFC approached a large Puget Sound-wide shellfish company, asking this seemingly natural ally for their partnership in the emerging Keep our Seafood Clean Coalition. This shellfish company declined this request, stating that they had no desire to speak publicly about the fish consumption rate, for fear of negative press and market repercussions. They cited a specific previous instance in which China, one of their main shellfish markets, embargoed their shellfish during a routine vibrio outbreak in the Puget Sound, costing them a large unspecified amount of money (S. Jackson², personal communication, April 1, 2013). While vibrio is a naturally occurring bacteria in the Puget Sound and occurs yearly when the waters warm, Chinese officials saw the press surrounding the vibrio outbreak and deemed the shellfish company’s seafood unclean. The shellfish company expressed a concern that having a public

² Source has been anonymized.

conversation about the fish consumption rate could elicit a similar reaction, with their international market believing that the current amount of fish and shellfish they were eating was unsafe or unclean. Thus, in going forward with their Keep Our Shellfish Clean Coalition, NWIFC has not been actively conducting outreach and education specifically to the fish and shellfish industries, concentrating instead on other industry, environmental organization, and health community support and engaging in outreach to the general public. While NWIFC has not been actively conducting outreach and education to the fish and shellfish industries, NWIFC staff expressed a potential information need in assessing the broader fish and shellfish industries knowledge of and opinions toward increased water quality standards and the fish consumption rate. While there was an initial reluctance from one shellfish company to take a public stance on this issue, the fish and shellfish industry is diverse and little is known of their knowledge and opinions toward increased water quality standards and an updated fish consumption rate. After consultation with NWIFC staff, we came to the agreement that I would engage in a parallel effort wherein I, as a student researcher and not representative of NWIFC, would explore this research niche.

Research Methods

My research methods include review of secondary sources, contextual coding, ethnographic research including interviews, and finally coding comparison and synthesis.

Review of Secondary Sources

I used review of secondary sources as a primary method for my literature review, study area and research context, and water quality standards history and current criteria. Secondary sources include, but are not limited to government and organization

documents and letters, websites, informational pamphlets, journal articles, books, and newspaper articles. Within my second chapter, I situate my research within the broader political ecology literature, providing first a brief backdrop of water resource management as an inherently political process and then turn to indigenous/state co-management within resource conflicts. Within my third chapter, I discuss my study area of Western Washington and provide research context for tribal, State, and Federal relations within Washington State, with a focus on conflict, co-management, and agreements. Within my fourth chapter, I provide context for Washington's water quality standards debate by describing the pertinent history of the Clean Water Act and National Toxics Rule, EPA's evolving water quality standards guidance, Washington's current water quality standards, and other tribal and state water quality standards. Due to the dense nature of this topic, I delve into this topic more thoroughly, reviewing and synthesizing an array of EPA and Washington technical documents, guidance, and Federal registers and codes that are applicable to the human health criteria and toxics control.

Review and Contextual Coding of Secondary Sources

Within my fifth chapter, I provide a timeline of the current fish consumption and water quality standards debate, including a discussion of the governments and stakeholders that have been invested within this process. I then characterize the existing debate by assessing the competing public positions and narratives of the Keep Our Seafood Clean Coalition and non-fish and shellfish industries through review of information from government and organization documents and letters, websites,

informational pamphlets, social media accounts, and newspaper articles; and then contextually coding of that data.

Sampling strategy and size. I surveyed public documents and chose three pieces that I determined to be broadly representative of the public materials produced by the two of the most active groups, including the Keep Our Seafood Clean Coalition, and the Association of Washington Businesses. For the contextual coding, I combined two methodologies, a method discussed as discourse analysis (Schneider, 2013), and an established method for coding (Bernard, 2011). While the data is not statistically generalizable and thus does not have a high external validity, the information and qualitative themes have internal validity as a sample of each government and stakeholder group's viewpoints and narratives of Washington's water quality standards and fish consumption rate.

Coding and data analysis. In examining each group's three sample pieces, I first analyzed the material for factors such as context, genre, medium, layout, grammar, and rhetorical and literary devices (Schneider, 2013); and then coded the material by familiarizing myself with and reviewing the data to look for prominent patterns and themes (Bernard, 2011). In seeking out themes, I used inductive or open coding in choosing codes based on what emerges from the text, as well as in vivo coding technique in which explicit phrases or words used by subjects are utilized as codes (Bernard, 2011).

Ethnographic Research and Coding

Within my sixth chapter, I provide the results of my ethnographic research that I conducted with members of the fish and shellfish industries to ascertain a sample of the

industry's views and opinions toward Washington's water quality standards rulemaking, the associated human health criteria, and the fish consumption rate. After receiving approval from Central Washington University's Human Subjects Review Council, I conducted interviews from May to October of 2014 in Western Washington, in six areas I have broadly demarcated as Coast, Columbia, Hood Canal/Straits, South Puget Sound, Mid Puget Sound, and North Puget Sound. Below, I outline my sampling strategy, sample size, recruitment, interviews, and coding and analyzing of the data.

Sampling strategy. Due to my desire to conduct more in-depth interviews with this small subset of the population, I used purposive sampling in conjunction with chain referrals. Purposive or judgment sampling is often used in intensive case studies (Bernard, 2011), of which my research can be classified as I assessed the knowledge of a temporal phenomenon from a specific subset of the population. I focused on the following broad categories of the fish and shellfish industries: non-tribal shellfish growers, non-tribal commercial fishermen and agencies, tribal seafood companies, seafood distributors and retailers, sports fishing organizations and guides, restaurants specializing in local seafood, and organizations advancing local seafood businesses. While the data is not statistically generalizable and thus does not have a high external validity, the information and qualitative themes have high internal validity as a sample of the fish and shellfish industries' knowledge base and opinions toward Washington's water quality standards and fish consumption rate.

Sample size. I conducted a total of 28 interviews with 30 subjects: six with shellfish growers, five with seafood retailers, four with tribal seafood companies, three with commercial fishermen, four with sports fishing guides, four with restaurants that

specialize in serving local seafood, and two with organizations that advance or represent local seafood businesses. Due to the personal contacts I had within the shellfish community and the chain referral provided within the interviews, I was able to exceed my original expectations for interviewing this subcategory. I conducted the fewest interviews with the subcategory of organizations that advance local seafood businesses. I included this category with two specific organizations in mind, assuming that I would research and/or receive referrals for other applicable organizations. However, I did not receive referrals nor was I able to find other applicable organizations within my own research. As such, I determined that the two interviews I conducted were sufficient for my research needs.

Recruitment. For all subcategories, I targeted subjects at a management level within each organization and/or company, as these individuals would more likely have in depth knowledge of the priorities, challenges, and issues facing their specific shellfish and/or fish industry. To identify initial subjects for recruitment, I used a variety of methods, including work and personal contacts, chain referrals, and cold calling or emailing after ascertaining potential subjects through internet searches and websites.

Non-tribal shellfish growers and tribal seafood companies. Given the existing personal and work contacts that I have through the private commercial shellfish industry and employment by the inter-tribal Northwest Indian Fisheries Commission organization that is jointly running the Keep Seafood Clean Coalition, the two subcategories I found “easiest” to recruit and receive chain referrals from were non-tribal shellfish growers and tribal seafood companies. For these two categories, my recruitment strategy was rather simple and consisted of speaking with personal/work contacts or Facebook posting that I

was looking for potential subjects to interview. I would receive a referral and contact information that I would then call or email the potential subject to provide information about my thesis, ask if they would be willing to be interviewed, and then receive an affirmative answer. I recruited four of the six shellfish growers in this fashion and received a chain referral from one of my other subjects for my fifth interview. My recruitment of three out of my four tribal seafood companies followed a similar trajectory. While this recruitment method worked well and could have been continued for both subcategories, I found that my subjects were concentrated within the Hood Canal/Straits and South Puget Sound areas. As I felt the need to expand my geographic area to other regions of Western Washington so that these subcategories would not be completely geographically clustered, I recruited my final two subjects within both categories through cold emailing and calling a North Puget Sound tribal seafood company and cold emailing and in-person recruitment of a coastal shellfish grower. I refer to these as “cold” as I was not referred to nor had any previous contact with these two companies. For the latter, I then “cold” called, emailed, or visited their place of work in person to attempt to recruit them. However, these “cold” shellfish grower and tribal seafood company recruitments went relatively smoothly due to my knowledge and background of shellfish growing for the former, and a combination of subject matter and my NWIFC employment for the latter.

Commercial fishermen and sports fishing guides. Two subcategories that proved challenging to recruit, in part due to fishing season and in part due to my lack of background and entrenched contacts, were commercial fishermen and sports fishing guides. Compared to the non-tribal shellfish growers and the tribal companies, the

recruitment for these subcategories took a substantial amount of time and effort. The snowball referral method had about a fifty percent success rate wherein I was provided with subjects that I would not have had access to and/or might not have chosen to speak with me due to a lack of personal contact. For both subcategories, I used a combination of personal and work contact referrals and was provided chain referrals from a subject within the sports fishing guide subcategory. One of the sport fishing guides, for which I had received a chain referral from another sports fishing guide and eventually was able to interview, laughingly said, “I was really trying to blow you off, you're very persistent.” I found that with the sports fishing guides, in particular, repeated (six to a dozen) calls and emails were necessary to schedule interviews. After canceling an interview appointment and then subsequent lack of response to my inquiries, I eventually found it necessary to stop calling one sports fishing guide who had been chain referred. The commercial fishermen were easier to schedule with once recruited, but were equally difficult to initially reach.

Organizations that advance local seafood businesses. For the subcategory of organizations that advance local seafood businesses (organizations), I used a combination of personal contacts and cold calling/emailing. A personal contact arranged for me to attend and participate in an informal shucking competition at a local seafood festival in late April, through which I met and recruited a subject. For the second subject within this subcategory, I cold emailed and called this organization and through a relatively small amount persistence and follow-up, I was able to schedule an interview with a staff member.

Seafood retailers/distributors and restaurants that specialize in local seafood.

For the remaining two subcategories of seafood retailers/distributors (retailers) and restaurants that specialize in local seafood (restaurants), I relied almost entirely on cold emailing, calling, and in-person recruitment. For the seafood retailers/distributors, I had a recruitment success rate averaging ~50%, wherein I was able to successfully recruit half of the subjects that I contacted. Within the restaurants, my recruitment success rate was only ~25% wherein I was only able to recruit a quarter of the subjects that I contacted. For the seafood retailers/distributors, I recruited two of the five retailers through email/calls alone and three of the retailers through in-person recruitment where I visited the retailer and either left my informed consent or spoke with the manager/owner who then agreed to be interviewed at a later date. For the restaurants, I was able to recruit one subject through a personal contact and recruited the rest through cold calling, emailing or in-person recruitment. One of the successful restaurant recruitments responded to my calls/emails and two of the restaurants responded due to my in-person recruitment where I stopped by their restaurant and left my informed consent and note asking for an interview. For both of these subcategories, I found that there were a large number of subjects available in the State and, in being retail and restaurants targeted toward the general public, their contact information was easily accessible via website. However, despite the large number available and relative ease of obtaining contact information, my lack of personal contacts made recruitment more difficult and time consuming. Additionally, my focus on restaurants that specialize in local seafood inherently lead me to more “high-end” restaurants with higher price points and more well-known chefs or

owners, which could have also influenced their lack of willingness and/or time to respond.

Interviews. I conducted open-ended semi-structured interviews with subjects. Below, I detail the interview questions and background, informed consent and anonymity, question changes, and scheduling.

Interview questions and background. I focused on a base of pre-determined questions, but allowed and encouraged the subject to define and expound on issues of concern to them in regards to their industry. For my interview question range and structure, I used a University of Washington master's thesis conducted to determine the views and opinions of agricultural landowners toward the regulation of riparian buffers in the Skagit Valley of Washington State (Breslow, 2001). I found these particular questions useful due to the similar purpose and method, with the researcher engaging in ethnographic interviews to assess the views and opinions of a particular stakeholder group toward a highly contested state regulatory program. I modified the questions to suit my own research purpose, adding questions regarding the background of the subject, the subject's overall concerns and priorities, and the subject's views and knowledge of Washington's water quality standards and proposed updates to human health criteria and fish consumption rate (Appendix A). I ran a trial interview with a shellfish grower colleague to assess the flow of certain questions and used this feedback to revise the wording of certain questions to improve clarity.

Informed consent and anonymity. I asked and was granted permission to voice record each subject so that a record existed for full and easier transcription and so that I could interact more easily and organically with the subject in the course of the interview.

I obtained “informed consent” (Appendix B) from each subject. Many subjects would ask to wait until the end of the interview to decide whether they wanted to be anonymous and/or would change their mind in the middle the interview. Overall, 13 of 28 (46%) participants chose to be anonymous. Due to the relatively small interconnected world of the seafood industry, I determined early in the recruitment and interview process that I would instead anonymize every interview so as to ensure the protection of those who did choose to be anonymous.

Question changes. There were two questions that I regularly started to omit within interviews, the first of which was “are you affected by fish advisories?” and the second of which was “what do you see as barriers to higher water quality standards?” I began to phase the former out due to the confusion with which this question was regularly met. I included this question believing that Health might be providing members of the fish and shellfish industry the fish advisories they post on their website recommending limiting consumption of certain fish due to their increased toxicity levels. However, due to the confusion, it became apparent that Health did not provide this information, unlike the shellfish advisories and closures they provide as a regulatory agency. I omitted the second question in a more judicious fashion, only including it when the subject expressed a favorable opinion toward obtaining higher water quality standards. If a subject answered that they did not believe higher water quality standards were necessary, I felt as though asking them about barriers was not pertinent.

Bias. As I do not believe that true objectivity and lack of bias exists (see “situating myself” section below), I strove to be as truthful as possible with subjects regarding my own personal biases. I would inform each subject that I was an employee of

the Northwest Indian Fisheries Commission, but that I was conducting this research on my own time as a graduate student. I explained that tribes and inter-tribal organizations were involved and invested in this debate, and that while my employer may be interested in my research, they were not paying me to conduct it. In explaining my research and the informed consent, I would often tell subjects that I had a bias toward higher water quality standards, but that I was truly interested in learning about the subject's view on the issue. Within each interview, I provided most subjects a base overview of the fish consumption rate and water quality standards update and debate, would answer any clarifying questions they had, and would then often engage further with the subject at the end of the interview and answer any questions they had regarding my views.

As many subjects did not have in-depth knowledge about the fish consumption rate and water quality standards debate, my narration of the debate most likely had some influence over their initial views. I attempted to wait until the end of the interview to speak more fully on my views so as to not overly bias the subject or run the risk of hearing my own words repeated back to me. However, some subjects, one in particular, wanted to know more about my views and research within the interview and assured me that I would not bias their opinions. Overall, as subjects provided me their time and so freely sharing their views, I felt it important to be as honest and reciprocal with information and my views as possible.

Scheduling. Regardless of how smoothly the recruitment went, scheduling the actual interview was often an issue, with many emails or calls being exchanged to discuss time and location. I always provided a choice of venue and time/day for the subjects and found that the vast majority requested or needed their interviews to take place during the

work week and at their place of business. Subjects would often volunteer to conduct the interview via phone, but I requested and was able to interview each subject in person. I valued and prioritized in-person interviews as I wanted to make a connection with each subject, make them feel more comfortable, and engage with them on an in-person level. While many subjects were clustered in specific areas, I found it was rare that I was able to schedule and conduct more than one interview in a day. In calculating the total mileage to reach subjects, I drove approximately 3,000 miles around Western Washington, with the average roundtrip 105 miles. Interviews ranged from 16.5 to 59 minutes and averaged 33 minutes in length (see Appendix C for interview dates, subcategory, location, and length).

Coding and data analysis. Once completing an interview and assigning each interview a code, I transferred the interview from the recorder to my computer so that I could play and transcribe each interview by hand. I quickly discovered that listening to each interview and attempting to transcribe at normal speed required me to rewind the recording multiple times before I was able to capture the full subject response. At the recommendation of a colleague, I downloaded and used a VLC media player that allowed me to slow the playback speed significantly and I was able to transcribe more quickly. This hand transcription allowed me additional time to familiarize myself with the interview data and to build a preliminary code list. Within the first iteration of the code list, I organized the codes by question and almost primarily used the in vivo coding (Bernard, 2011). Once I completed the transcriptions, I anonymized each interview to remove reference to specific names, oyster species, towns, and companies and inserted

each interview into an ethnographic program (Nvivo). I then condensed my code list and re-organized it for prominent patterns and themes (Bernard, 2011).

Coding Comparison and Synthesis

For my concluding chapter, I compare coding results from the fifth and sixth chapters in order to assess commonalities between subcategories of the fish and shellfish industries and other group narratives. While I assessed additional information for the other group narratives, including context, genre, medium, layout, grammar, and rhetorical and literary devices, I used similar coding methods for both the group narratives and the fish and shellfish industry interviews in order to best assess commonalities. I additionally compare and synthesize the information from previous chapters to provide overarching conclusions.

Theoretical Framework and Literature Context

In situating this thesis, I look to the interdisciplinary field of political ecology as a broader theoretical framework to analyze the contested discourse of water quality in Washington State. As Blaikie and Brookfield (1987) have defined it, “‘political ecology’ combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself” (p.17). In addition to defining this interdisciplinary approach toward interweaving culture and nature, Blaikie and Brookfield placed a huge emphasis on studying the “land manager” and the land manager’s perceptions, recognizing and accepting that “plural perceptions, plural problems definitions, plural expectations and plural rationalities” exist and drastically affect ecology and the environment (p.16). It is this land manager-centered approach,

with recognition of the need to analyze plural realities and perceptions that provides a basis for my analysis.

Since Blaikie and Brookfield, there has been a wealth of diverse literature representing the field of political ecology. The vast majority of the literature delves into resource conflicts within the “third world” or developing countries, focusing on a field of disparate, but often overlapping topics that range from the politics and contestations of conservation with a specific eye to local or indigenous perspectives and livelihoods (Perreault, 1996; Sundberg, 2003); to the role, power, and often non-unified nature of the state, (Moore, D., 1998; Robbins, 2000); to broader issues of environmental justice (Martinez-Alier, 2000; Zerner, 2000). Robbins (2004), in discussing the main themes and research goals of political ecology, states that the four “big questions” include environmental conflict, degradation and marginalization, environmental identity and social movement, and conservation and control (p.13). Additionally, as it is a relatively new discipline, a good portion of the political ecology literature focuses on defining and analyzing the field itself, taking a critical eye to its focus, including discussing the field’s general concentration on “third world” and the need/call for how additional work should be conducted in the “first world” (McCarthy, 2002, 2005; Walker, 2003); its perceived and/or actual abandonment of the biophysical ecology portion of the field for focus on the purely political (Walker, 2005); and its emerging subfields and the future of political ecology (Rocheleau, 2008; Watts & Peet, 2004).

However, in connecting my thesis to political ecology, I specifically look to McCarthy (2002) who, in discussing the application of political ecology’s major themes to the “first world,” states that “[i]t is arguably the *presence* of. . . [certain] themes as

objects or components of case studies that defines political ecology more than any consistent theoretical or methodological *approach* to them” (p.1283). Thus, rather than mimicking a specific solidified approach, I focus in on political ecology due to its prominent themes of analysis, which include, but are not limited to,

access to and control over resources; marginality;. . . the centrality of livelihood issues;. . . the importance of local histories;. . . the disenfranchisement of legitimate local users and uses; the effects of limited state capacity; and the imbrications of all these with colonial and postcolonial legacies and dynamics. (p.1283)

In recognizing these themes as present within and pertinent to my thesis, I specifically situate my research within indigenous/state co-management over resources generally within “first worlds.”

Additionally, I find political ecology applicable to this thesis as many within the field provide analysis in areas of environmental justice and not only accept, but promulgate activist scholarship. As Zimmerer (2000) states, “[p]olitical ecology seeks to contribute *both* to sound environmental management (including nature conservation) and to the empowerment of disadvantaged social groups. . .” (p.357). Tribes in Washington State, while currently in a much more powerful legal and political position due to the effects of the 1974 Boldt Decision (Breslow, 2011), have historically been and currently are a disadvantaged group that are attempting, through the State policymaking, to reduce pollutants and increase water quality standards. I value and seek to advance both the environmental goal being advocated, as well as the associated empowerment of tribes who are advancing it. In holding “objections to objectivity” (Zinn, 1989), I find political ecology’s recognition and acceptance of dual academic inquiry and activism a much more truthful and valuable premise. Zinn’s discussion of the false nature of objectivity

emphasizes that objecting to objectivity does not mean ignoring data or merely looking for information to support one's beliefs, but "asking questions that were important for social change, questions relating to equality, liberty, peace, justice – but being open to whatever answers were suggested. . ." (1989, p.58).

Growing up on the Hood Canal of the Olympic Peninsula of Washington State as a person of mixed non-Native and Native descent who has engaged in both subsistence and commercial aspects of fish and shellfish, I bring an inherent set of biases and what could be perceived as a lack of "objectivity" toward this endeavor in valuing and viewing water quality as connected to the health, livelihood, and culture of many Washingtonians. However, I look to Zinn (1989) and to poststructural or postmodern feminist geographers in believing objectivity in itself does not exist and that it is within recognizing and being upfront about the intrinsic biases and values that are within each researcher that more truthful and valuable analysis can occur. When referencing postmodern feminist geographers, I do not focus (nor do many feminist geographers) on only studies or theories that discuss gender differences, but instead look toward those such as Ekinsynth (2002), who describe more broadly how feminist geographers "think carefully about their personal role in the research process, to consider the nature of their performances, the role of their positionality and the part played by interpersonal relations between themselves and their research subjects. . ." (p.179). While there are distinct differences, postmodernism and feminism theories and/or methodologies can often overlap, with some feminist geographers believing that postmodernism stole from feminism as "[t]he postmodern critique of a singular knowing subject who is able to detach himself from the world and both understand it and represent it unproblematically came as no surprise to

feminists who had never had access to such a position” (Creswell, 2013, p.193).

Ekinsmyth (2002) discusses how feminist geographer methodologies not only critique claims of objectivity, but also focus on the importance of power relations; the “partiality of knowledge” wherein knowledge is acknowledged to always be situated rather than universal; the everyday knowledges where all voices, not just the researcher's, are considered equal; and the diversity of methodologies and goals for research. It is with this framework in mind that I first situate myself below, discussing my background and perceived biases within this research.

Situating Myself

I have been eating Puget Sound fish and shellfish since before I could eat solid food. As the daughters of Dan and Diana Waters of Lilliwaup, Washington, my sister and I grew up eating what our parents ate. I did not realize how true this was until I was a teenager and my parents very jovially told me that instead of buying expensive baby food, they would often take their dinner and place it in our family's manual meat grinder (the large metal kind that so nostalgically clamps to the cutting board and requires a hand crank) and out would ooze a gelatinous oyster, clam, and veggie mush. Like many residents of Washington, particularly those in rural regions, my parents did not have a significant amount of money in their youth when they were raising my sister and me. However, they did have access to Hood Canal waters and beaches, and for the price of an annual fish and shellfish license (which, 30 years ago, was even lower than the current \$54.50/year) and a bit of work, they could feed their family. I cannot recall how many times I was dragged down to the beach as a child (dragged is perhaps a harsh term, I often went willingly) so that they could obtain my limit of oysters, which is the same

limit today as it was then – 18 oysters per person per day. I tell this story not because my background is unique; I tell it because it is not. Many community and family members that I grew up with and that I am related to, both native and non-native, have a similar upbringing to mine. I stress native and non-native as so often within Washington State, a divide is made between these two groups, particularly when discussing fish and shellfish rights, subsistence, and commerce.

I was raised on the Hood Canal of the Olympic Peninsula of Washington State and am of mixed native and non-native descent and heritage, specifically born of Norwegian, Polish, English, Welsh, German, and Clatsop Indian ancestry. I grew up in a community of mainly non-natives located 15 minutes north of the mainly native community of the Skokomish Indian Tribe. Growing up, I gathered and worked with seafood from a mainly non-native legal perspective, as my native ancestry is Clatsop of the Chinook Nation, an unrecognized Tribe with no Federal rights or current Washington State-recognized rights to fish or shellfish. My immediate family's subsistence fishing and shellfish gathering was licensed by the State of Washington, rather than a tribe. Additionally, my first job in the summer of my 7th grade year, consisted of picking single shell oysters on the tideflats of a private non-native owned Lilliwaup shellfish company with which I had and continue to have close community and friendship ties. I continued in the employ of this company for almost the entirety of my pre-college work experience, working either on their tideflats or selling oysters and clams to tourists in their seafood store. Additionally, as my aunt married into the neighboring Skokomish Indian Tribe, I also grew up with my first cousins engaging in tribal commercial fishing and shellfish gathering, which provided my family with additional seafood. Each year, my cousin and

uncle provide my father with Hood Canal silver salmon that he then smokes and cans. In typical Salish or Hood Canal fashion (these two can sometimes overlap), this smoked fish is then divided in half between our two families as my cousin and uncle provide the labor of obtaining the salmon and my father provides the labor of smoking and canning.

Through my experience and upbringing, I have found that reliance and value placed on fish and shellfish, regardless of race or ethnicity, is a common binding thread on the Hood Canal. Many residents of both Lilliwaup and Skokomish rely on Hood Canal seafood for subsistence and commerce and, in this, share an upbringing and way of life that is uniquely Washingtonian, uniquely Puget Sound, and part of our broader cultural and economic heritage. As someone of mixed descent and heritage, I see and often seek out these similarities, rather than the divisions that are too often emphasized. I see this background as particularly pertinent to my thesis as I am choosing to focus on a largely native coalition and assessing support for this coalition and higher water quality standards from both the native and non-native fish and shellfish community. I place value not only on higher water quality standards that will be protective of all seafood consuming and marketing Washingtonians, but on assessing the potential of and/or barriers to active native and non-native collaboration in advancing this issue. I value and seek to advance the tribal and environmental group perspective in which a concentration on overall human health and a collaborative framework of coalition building are being utilized as tools to obtain more stringent water quality standards.

Chapter Outline

Within my second chapter, I review the literature of how water management is an inherently political process and of indigenous co-management with state governments

over resources. In my third chapter, I present a brief discussion of my study area of Western Washington, and a history of tribal, State, and Federal relations in Washington, including how the concept and term co-management has been and is utilized within Washington. Within my fourth chapter, I provide a discussion of EPA's water quality standards regulations and guidance, the background to Washington's current water quality standards, the specific factors of the human health criteria, and other neighboring state updates. For my fifth chapter, I provide a more in-depth timeline of this debate and look more closely at the public positions taken by two of the groups vying for control over the water quality standards outcomes. For my sixth chapter, I discuss the results of my ethnographic research with members of the fish and shellfish industries and provide a discussion of their views and opinions of the water quality standards update. For my final chapter, I discuss the current status of the debate, the knowledge of fish and shellfish industries toward the fish consumption rate and water quality standards, commonalities between members of the fish and shellfish industries and the other group narratives, and provide recommendations for advancing higher water quality standards and possible avenues for future research.

Conclusion

Of all industry in Washington State, the fish and shellfish industry seemingly have the most vested interest in and economic incentive to support clean water and healthy habitat. The commercial and recreational fish and shellfish industries contributed a little over \$8 billion in sales and supported 67,000 jobs in 2011 (NMFS, 2012). This important contribution to the State's economy shows that the fish consumption rate and associated higher water quality standards is not just a critical human health issue, it is

economic health issue for the fish and shellfish industry, the State, and its inhabitants. Given the key place that the fish and shellfish industry hold economically, particularly in the context of the critical feedback provided by various industries in response to Ecology's first technical document and the ongoing rulemaking process, obtaining their views and opinions toward this debate should answer a critical data gap. Their support could be a potentially crucial component in building a coalition that educates the public to the need for advancing the adoption of a higher fish consumption rate and combating industry objections to rule implementation for the overall multi-faceted importance of improving water quality. Clean water that is free from harmful pollution is not only codified as a primary goal within the Federal Act of the same name, but is an essential right for all who eat our fish and shellfish.

CHAPTER II

LITERATURE REVIEW

Introduction

My literature review focuses on indigenous and state resource co-management, as grounded and prefaced by water as a political common-pool resource. There were a multitude of other foci and alternate literature review paths I could have pursued, including that of environmental justice due to its applicability to this debate in which high fish consuming native people are being placed at a higher risk due to toxic pollution from large industry¹. However, I am choosing to contextualize my thesis within this literature due to my concentration on how multiple stakeholders and governments are publicly contesting common-pool water quality, as played out and debated within the policymaking arena in a state that has a legalized framework for indigenous co-management of treaty resources. Below, I first provide a brief backdrop of political ecology literature that discusses the inherent politicization of water as a common-pool resource, and will then turn to literature that discusses indigenous and state co-management agreements and conflicts regarding resources.

Water as an Inherently Political Resource

A contingent of the political ecology literature discusses the inherent political nature of water and water resource management (Bakker, 2003; Mollinga, 2008; Swyngedouw, 2006). In discussing the connections between water management and political ecology, Zimmerer and Bassett (2003) state that the “conjoined socio-biophysical nature of water management lends itself to political ecology analysis” (p.8)

¹ See Nokes' (2014) excellent legal brief that focuses on environmental justice in regards to this very debate.

including the politics surrounding its inherent attributes of flows, management, and measurement. Additionally, Swyngedouw (2006) states that “in the proliferating and abundant literature on water problems and the ‘water crisis’ relatively little if any attention is paid to one of the most trivial of truths, i.e. *that water flows to power*” (emphasis added, p.16). While Swyngedouw is speaking to water access rather than water quality, the premise of water management being inextricably connected to power remains true and is directly applicable to this water quality standards debate. In addition to the argument that water is well suited to political ecology and water resource management is inherently political, issues that are also explored within the broader water management literature and that are particularly pertinent as a backdrop to this thesis are the politics of property rights, common-pool resources, and externalization.

Water, as a resource that flows, is not always singularly “owned” by users. In discussing issues of property rights, Bakker (2003) states “[w]ater, unlike land, is a flow resource; interconnected, and less easily bounded above or below ground. Water may form several functions in one circuit through the hydrological cycle. This difference is reflected in the fact that property rights are more difficult to establish for water than for most other resources, and boundaries are often more blurred” (p.47). In a related issue to property rights, Young (2003) states that aquatic resources are generally problematic in that they “are typically considered to be common-pool or common-property resource, which implies a class of goods for which it is difficult to exclude users and the good exploited by one user subtract from those available to others. . .” (p.36). These issues of water having both a complexity of property rights and the potential for the common good to be exploited can easily lead one to Hardin's (1968) well-known “tragedy of the

commons” wherein a overuse or destruction of a common resource can occur if users only think of their own needs, rather than the broader public's.

Bakker (2003), in discussing the marketization of water in Spain, points to how water can be monopolized and that profit from water is connected to being able to externalize costs to other users. She states that externalities are “peculiar to it as a resource” and that profit is often determined by “the degree to which negative externalities can be displaced through taking advantage of the unique flow properties of the water resource. . .” (p.47). Barnett (1992) also speaks to externalization in discussing how a business owner may dump toxic waste rather than send it to a landfill as the former is the cheaper option. He states,

[t]here is a twofold consequence of this decision. Either the exposed population suffers injuries and society loses resources such as clean drinking water supply or the exposed population and society bear the cost of clean-up to gain protection from injury and natural resource damage. This is classic instance of market failure; the firm is able to shift a production-related cost onto a third party, thereby *externalizing the cost*. (emphasis added, p.94)

He goes on to state that this externalization of costs allows the industry to grow to and be profitable to levels far above than if the production costs were internalized to the industry.

I point to this small subset of the literature to discuss the backdrop to which the complicated Washington water quality standards policymaking process is occurring. Washington's waters, as a common-pool and shared resource, provide multiple functions for multiple users, including use as a drinking source, a marine home for fish and shellfish that citizens and tribal members eat, and also a regulated receiving body for diluting industry's toxic byproducts. One could argue that the Clean Water Act and

associated water quality standards were and are a regulatory answer to combat a “tragedy of the commons,” as prior to the seminal Act, point source industries were able to freely pollute the common waterways and thus externalize many of their pollution costs to the other users of the waterways (i.e. the public and tribal members). Following this argument and due to the inherent flow characteristics of water that allow for this externalization of costs, the human health criteria and fish consumption rate are an integral part of this regulatory backstop to try to control industry externalities. Without an accurate human health criteria and fish consumption rate, externalized industrial costs that would otherwise be internalized to the industry are instead born by fish consumers within Washington's waters, the common-pool resource.

Indigenous and State Resource Co-Management

The term co-management, originating in (Pinkerton, 2003) and generally defined in Washington State as the relationship between the State of Washington and treaty tribes in co-managing fish and shellfish resources (see Chapter III), has grown to serve a broader definition within the literature as also encompassing local stakeholders' relationship with the government. Castrol and Nielson (2001, p.230) discuss the increasing broadness and inclusiveness of the term, stating that many of these uses “render the term synonymous with participatory, collaborative, joint or multi-party management.” This broader sense of the term encompasses and discusses power sharing, institutional building, process, social capital and trust, problem solving and/or governance as between local resources users and the government. In this way, “co-management is not merely about resources; it is about managing relationships” (Berkes, 2009, p.1692).

Within this larger literature, discussion generally concentrates on the power-sharing relationship between local stakeholders and the government in managing a resource, but can often include indigenous/government co-management as case studies (Pinkerton, 2003; Rangan & Lane, 2009). Pinkerton (2003) discusses Washington State and tribal fisheries processes as a positive example of co-management in arguing that all fisheries co-management should be defined as “at least the right to participate in making key *decisions about how, when, where, how much, and by whom fishing will occur*” (p.63) and that any other definition essentially waters down the concept. A smaller subset of the literature focuses on either a more narrow definition of co-management as the specific relationship between indigenous peoples (e.g. Kendrick, 2002) and the government and/or how indigenous and government co-management relationships should and do differ from those of stakeholders and the government (Singleton, 2009; Wolfe-Keddie, 1995). Wolfe-Keddie (1995) references the broader definition discussed in the literature that is inclusion of local stakeholders, but points to how aboriginal or indigenous peoples in specific have focused in on co-management as a way to rise above unequal power relations with the state, obtain a role in decision-making that is formalized and recognized, and advance “principles of environmental sustainability and culturally appropriate development” (p.70).

For the purposes of this thesis, I will concentrate on research that specifically analyzes or includes as a case study co-management agreements and conflicts between indigenous people and governments. Much of the literature is focused within the “first world” or post-settler colonial states of the US, Canada, Australia, and New Zealand, which have instituted a range of agreements with varying outcomes (Hill, 2011). Below, I

will discuss the applicable broad themes within this literature, focusing on the definitions of and imbrications of co-management with indigenous peoples, including issues of co-management negating indigenous agency, what constitutes a meaningful co-management agreement, and issues with universal stakeholder inclusion within co-management conflicts and agreements.

Co-management forums negating indigenous agency. A common theme within the indigenous co-management literature is a critical view and analysis of the forums and processes through which states “co-manage” with indigenous peoples as disempowering or reinforcing of colonial relationships. Coombes, Johnson, and Howitt (2012), in discussing case studies where co-management has not fully addressed indigenous claims, argue that in certain contexts where deadlines are valued over negotiations “deliberative forums for deciding tenure or co-management become means for states and other parties to contest Indigenous rights or to reassert elite notions of entitlement” (p.814). They go on to reference Booth and Skelton's work with the Tl'azt'en Nation in British Columbia in stating that co-management can force First Nations to conform to non-Native forums that do not recognize their rights. Nadasdy (2005) discusses how co-management may appear to provide indigenous people additional rights, but may actually make it more difficult for them to contest state actions as the processes and replace “local aboriginal ways of talking, thinking and acting with those specifically sanctioned by the state” (p.228).

A related theme analyzed within the literature is the issue of “management” itself being often antithetical to indigenous worldviews and perspectives. Howitt and Suchet-Pearson (2006) problematize the assumption that wildlife and management have agreed upon definitions in Australia and state that the current discourse of wildlife management

“renders the privileging of management as the foundational concept for organizing social and environmental relationships on the ground invisible as an exercise of power over local indigenous systems of thinking and being-in-the-world. . .” (p.326). In this same vein, Hill (2011) argues for combining two different models that underpin co-management, common-pool resources and governance, as using the former alone in an Australian case study “effectively silenced Indigenous people as participation was contingent on acceptance of a system of technocratic natural resource management” (p.83). McGregor's (2011) research in Canada discusses how the discourse and conceptual framework has often been controlled by the state such that aboriginal people are forced to fit their concerns into this framework, “which frequently results at best in a loss of meaning, and at worst in having the information they share being used in ways which adversely affect those who shared it. . .” (p.303). Kendrick (2002) also discusses how the word management does not have an equivalent in the indigenous Dene and states that “[m]ainstream influences may decontextualize community structures and knowledge to such an extent that they are no longer meaningful or viable” (p.258).

Meaningful co-management agreements. Moving beyond definitions or negative expressions of indigenous co-management, much of the literature that discusses co-management with indigenous peoples devotes anywhere from a significant portion of the article to at least lessons learned or concluding remarks on the necessary components for a *meaningful* co-management process that recognizes and incorporates indigenous voices and rights. Wolfe-Keddie (1995) describes three different types of co-management agreements between aboriginal peoples and the state that vary in regards to their formality, process, and recognition of indigenous rights. She concludes her case study

analysis of First Nations in Canada with recommended factors for success that include shared authority for decision-making, upper-tier government commitment, formal agreements, capacity and funding, accountability, and use of aboriginal knowledge. Singleton (2009), in discussing the creation of marine protected areas, provides similar broad policy recommendations, including the need to consult with tribes before and then concurrently on a separate track with stakeholder processes, build capacity for tribes to participate in forums, and distribute costs of conservation equally rather having them be borne primarily by the tribes. Hill (2011) concludes that a key factor to co-management is the creation of an “equitable intercultural space” that has been initiated by indigenous peoples and also includes recognition of rights, organizations to support actors, and mechanisms to work together as instrumental for equitable partnerships. Coombes et al. (2012), in critiquing co-management for not fully addressing indigenous land claims and accounting for entrenched power dynamics, focus not only on the process through which it should occur, but on the outcome of such processes. They state that

“[d]ialogue must be frequent, meaningful and long-standing for suspicions about its purpose to subside; it cannot be contrived. Even the most carefully designed forum is unlikely of itself to generate ideal speech because it will not overcome the weight of colonial history. *How* issues are discussed is important, but less than *whether* the main concerns of Indigenous peoples will be discussed at all” (p.814).

Kendrick (2002) argues for the importance of trust and learning from both parties stating that “[c]ross-cultural co-management learning is dependent on the mutual recognition of the belief systems, metaphor, and alternative narratives of the parties involved in co-management” (p.252).

Inclusion of other stakeholders. Within the literature, there is a broad view toward the inclusion of other stakeholders within policymaking and co-management,

ranging from those who criticize the inclusion of local stakeholders as equal co-managers to those who discuss the benefits of indigenous and stakeholder collaboration.

Coombes et al. (2012) caution against the broader definition of co-management being used and advocated by other researchers in stating “[t]hose who call for such reforms fail to disclose that their case studies of good governance for uncertain times were established to implement the proven rights of Indigenous groups, or that inclusion of more knowledge producers may disenfranchise the original claimants” (p.815). They go on to cite Singleton's (2009) work wherein she discusses issues in universally including other stakeholders to the detriment of tribes and First Nations. Singleton's analysis, in focusing on the complications and derailments that have occurred in states attempting to plan marine protected areas, states that “[a]mong many academics and policymakers there is a pervasive, and almost unthinking, sense that an appropriate response to is one in which all “stakeholders” enter on a more-or-less equal footing” (2009, p.433). She points to tribes and First Nations as being an “inconvenient exception” to this mentality and recommends that tribes need to be consulted before and concurrently on a separate track than stakeholders processes due to the different formal and informal institutions relevant to indigenous people. Rangan and Lane (2001) analyze forest management with indigenous peoples and stakeholders in both Australia and India and conclude that while joint forest management works relatively well within India, in Australia there is “substantial misunderstanding and misrepresentation of aboriginal concerns in the public domain, particularly when indigenous groups assert their legitimate claims to substantive participation in decision making” (p.153). One of the reasons they state this occurs is due to the fact that the agreements do not recognize

native title to lands and that certain stakeholder groups dominate the process. They point to the result by which “policymaking processes in democratic states become terrains where much more than resource allocation, management, and distributive justice is decided. They serve as 'public' arenas where the meaning and substance of democracy are continually put to test by social groups” (p.149).

However, Takeda and Ropke (2010) discuss collaboration with stakeholders more favorably in analyzing the decades long process through which the Queen Charlotte Islands (Haida Gwaii) community in British Columbia gained a collaborative ecosystem-based management for protected areas and timber harvest. The authors do not discuss the broader co-management literature or definitions, but are positive regarding the inclusion of other stakeholders (community members) viewpoints in addition to the Haida Nation within the planning process. While the community planning forum that the Haida Nation co-chaired with government included timber industry, ecosystem representatives, and community representatives ended divisively with a report that the Haida and the community felt marginalized their priorities to industry's, the authors contend that this forum was instrumental in building trust and relationships, scientific agreement, and a shared vision for the future among the community members (in which the authors include the Haida). A later Haida blockade of roads, supported by the non-industry community, to protest timber extraction ultimately led to a negotiated land use agreement that was more protective of lands, provided compensation for the Haida, and resulted in decreased timber extraction. The authors states that due to this community planning forum, the “Haida negotiators, backed by the community blockade and armed with an assemblage of maps, ecological inventories, analyses, and a collective community vision, were able to

reclaim a substantial measure of control over land use decisions and dramatically change the direction of logging and forestry politics on Haida Gwaii” (p.187). The background and framework that the authors describe is one in which the Haida were first implicitly recognized as holding title to lands through the co-chair and guiding of the community planning process, and then later explicitly recognized through a negotiated land use agreement, as well as a parallel Canadian supreme court case that determined that consultation with First Nations was a requirement in renewing tree farm licenses.

Conclusion

As demonstrated by the brief discussion above, co-management can represent a wide variety of meanings, forums, and interactions between state and indigenous peoples. Some within the literature caution against co-management negating indigenous agency or being inclusive of other stakeholders unless tribes are provided a separate policy line or have legal rights that would not be superseded by powerful stakeholders. However, examples of positive expressions of co-management include but are not limited to agreements which recognize and incorporate indigenous rights, decision-making shared authority, accountability, and use of aboriginal knowledge.

An additional theme within some of the work above are authors who point to tribal relationships with Washington State as the ultimate expression or positive example of co-management. Singleton (2009) points to the “excellent set of guidelines” (p.434) provided by Washington State tribes and Pinkerton (2003) points to Washington tribal as “complete” co-management, and even caveats her work to state that “social scientists will be tempted to dismiss the case presented here as too unusual to be useful” inferring that the tribal/state co-management in Washington state is unique (p.75). While Washington

may represent a unique or “advanced” example of co-management, the relationships between tribes and Washington State agencies are diverse with varying legal frameworks and levels of collaboration and consultation. Analyzing Washington's fish consumption rate and water quality standards update through the lens of political ecology of indigenous/state co-management is pertinent due to not only the co-management power relations that are in play, but the highly contentious and industry-influenced debate that is occurring wherein contesting views and uses of a common-pool resource are being debated within a public policymaking arena.

CHAPTER III

STUDY AREA AND HISTORICAL CONTEXT

Introduction

In the following chapter, I provide a broad context for this thesis through the discussion of my chosen study area of Western Washington, including its applicable geography and natural resources, demographics, and economy. I then provide a research context of tribal, State, and Federal relations in Washington with concentrations on how the concept of “co-management” has been and is currently used, and on water quality processes as well as previous water quality standard comments.

Study Area

The study area for my ethnographic research is the broadly demarcated area of “Western Washington,” chosen due to the area generally representative of the Northwest Indian Fisheries Commission member tribes territories (Figure 1), as well as the majority of Washington State’s urban areas and water resources. While the semi arid climate of eastern Washington includes an extensive network of rivers and lakes, Western Washington is truly a landscape of water with its prolific rainfall, equally extensive rivers and lakes, Puget Sound, and an extensive coastline that borders the Pacific Ocean. Holding over 78% of the State’s population (Washington State Office of Management and Budget, WOMB, 2014), Western Washington also hosts the majority of the major industries, including Boeing and Microsoft, while the major industries of eastern Washington are farming and lumber (Webley, 2013).

However, that stated, the water quality standards update is a state-wide issue and applicable to all residents and NWIFC non-member tribes. As such, my chosen



Figure 1. The reservations of NWIFC member tribes (NWIFC, n.d.b).

concentration in interviewing subjects on the west side of the state must be noted in considering my analysis and findings. In contextualizing my study area below, I generally refer to state-wide geography, natural resources, demographics, and economics, but differentiate Western Washington when appropriate or possible.

Geography and Natural Resources

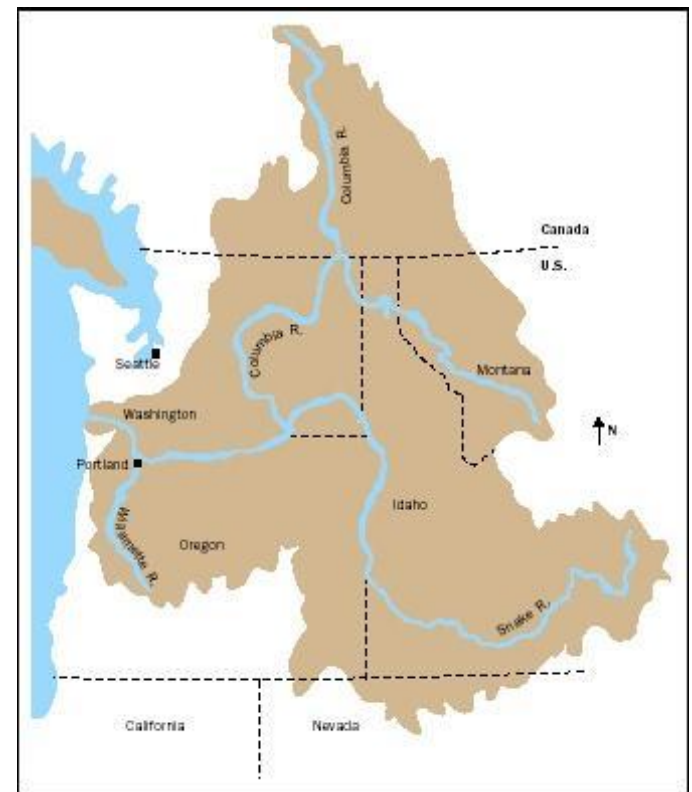
Water is generally recognized as Washington's most important natural resource allowing for power, irrigation, navigation, recreation, industry, and fisheries (McNamee, n.d.). The most northwest state in the contiguous US, Washington is demarcated by the

Pacific Ocean to our west, Puget Sound and Canada to our north, Idaho to our east, and Oregon and the Columbia River to our south. Washington's major water systems of the Salish Sea and Columbia River basin are highly connected to and receive flow from their neighboring states and Canada (Figure 2). Below, I will discuss the broad areas of the Columbia River Basin, the Puget Sound portion of the Salish Sea, and Washington's Pacific Coast.

Columbia River Basin. The far-stretching 1,200 mile long Columbia River originates within the Canadian Rockies of British Columbia, Canada, drains to an area that is roughly the size of France, stretches through eastern Washington State to form a partial border with Oregon, and continues through Western Washington until it meets the Pacific Ocean between Astoria, Oregon and Chinook, Washington. The Snake River is the Columbia River's largest tributary in stretching 1,083 miles from Wyoming to where it flows into the Columbia in eastern Washington near the Tri-cities (Columbia RiverKeeper, n.d.). This large basin was coined the “channeled scabland” by the geologist J Harlen Bretz (1969) due to its dramatic geologic features that were created approximately 12-19,000 years ago in what is termed the Missoula floods. The Missoula floods were the result of ice dams repeatedly breaking towards the end of the last ice age, allowing water from the then large Lake Missoula to rush through and carve the basin. Before the 1840s, the Columbia River was a historically epic producer of and estimated to be home to annual runs of 16 million salmon and steelhead. However, due to the effects of logging, human population pressures, modifications, and extensive damming, there have been dramatic effects on water flow, water quality, and salmon habitat. The number of salmon and steelhead has significantly decreased since the nineteenth century and into



A



B

Figure 2. The Salish Sea (A) (Washington's, 2009) and the Columbia River basin (B) (Allen, n.d.).

present, with runs now averaging less than one million per year (Columbia RiverKeeper, n.d.). The Columbia River's 14 dams currently provide one third of the hydroelectric power produced in the US, as well as contribute to the extensive irrigation system that provides water to the agricultural crops for which Washington is renown (McNamee, n.d.).

Puget Sound/Salish Sea. The Salish Sea is a relatively new term coined in 2009 to describe the large body of water that encompasses both the Georgia Strait in British Columbia, the Puget Sound in Western Washington, and the adjoining waters (Washington's, 2009). Washington's Puget Sound alone, a glacially carved fjord system inclusive of the Hood Canal and the Strait of Juan de Fuca, is the US' second largest national estuary at 16,577 square miles (NWIFC, 2012b) and largest national estuary by water volume (Public and Outside Witness Hearing, 2015). The Puget Sound region has 20 major river systems and is currently home to eight different anadromous salmonid species (NWIFC, 2012b). The marine wildlife that inhabit Puget Sound beyond salmon is extensive and diverse, including but not limited to over 3,000 types of invertebrates including crab, clams, and oysters; over 200 species of fish such as herring, cod, and rockfish; hundreds of species of birds including eagles, ducks, and loons; large mammals such as orcas, sea lions, and gray whales; and aquatic vegetation such as kelp and eelgrass (National Wildlife Federation, n.d.).

Land use and degradation within the Puget Sound region has generally varied by geography, with the mountainous areas used for logging and recreation, the lowland areas used for agricultural and rural residents, and the delta and nearshore areas used for industrial and urban residents (NWIFC, 2012b). There have been a significant number of

human pressures on Puget Sound in the last 100 years, including 436 dams that impound 37% of the drainage area, removal of 50% of the wetlands and forests and 1000 km of native shoreline, and introduction of over 700 invasive species (Pearson, Hamel, Walters & Marzluff, 2011). The Puget Sound has been called the “economic engine” of Washington (Sahandy, 2015), home to prominent industries and key to transportation of cargo and agricultural exports, and habitat for shellfish and fish. Significant State and Federal funds are devoted to Puget Sound salmon and ecosystem recovery, but recent reports (Judge, 2011; NWIFC, 2011; NWIFC, 2012b) reveal and emphasize that loss and destruction of habitat that is essential for healthy fisheries, is occurring at faster rates than recovery. Four of the eight salmonid species in the Puget Sound are listed under the endangered species act as “threatened” (NWIFC, 2012b). In looking specifically at the valued and iconic Chinook or King salmon, only 22 of the 37 populations remain and overall Chinook numbers are estimated at only 10% of historic numbers, with some river basins at 1% (NMFS, 2007).

Pacific Coast. The Pacific Coast is the eponymous coastal area of Western Washington that encompasses 4,968 square miles of watersheds, extending from the most northwest tip of Washington to the Chehalis River Watershed, which is just north of the western end of the Columbia River Basin (broad coastal area outside of Salish Sea in Figure 2). The Pacific Coast has eight major river systems, including the State’s second largest river basin in the Chehalis and Grays Harbor, a large estuary that also functions as an economic port. Like the Puget Sound, the Pacific Coast is also home to eight different anadromous salmonid species, including but not limited to pink, chum, Chinook, and coho salmon. Two of these species are listed as threatened under the endangered species

act. The Pacific Coastal region is lightly populated in comparison to the Puget Sound and is heavily forested at approximately 68% of the region. However, population and development pressures have led to a 9% decrease in forest cover in the ten year period between 1996 and 2006. This, in addition to invasive species and forest road conditions and density, is contributing to habitat degradation in the region (NWIFC, 2012b).

Demographics

At approximately 81%, the majority of the over 7 million inhabitants in Washington identify as white. The remaining population consists of Hispanic or Latino at 11.9%, African American or black at 4%, American Indian and Alaska Native at 1.9%, Asian at 7.9%, Native Hawaiian or Pacific Islander at .7%, and two or more races at 4.4% (United States Census Bureau, 2013). While the American Indian population is relatively small in relation to the other ethnic groups within Washington, Washington State has the eighth largest American Indian population in the nation (United States Census Bureau, 2012) and is home to 29 Federally recognized tribes. The majority of the total population lives in the Western Washington region. In 2014, the I-5 corridor counties, all within Puget Sound and Western Washington, and the metropolitan counties, the majority of which are within Western Washington, experienced growth rates higher than the other counties (WOMB, 2014). A six million person increase for the Puget Sound region, the most populous portion of Western Washington, is estimated to occur by 2026 (NWIFC, 2012b).

Economy

Washington State's economy is diverse and includes industries such as technology, manufacturing, government, agriculture, forestry, and fisheries (McNamee, n.d.). Below,

in focusing on the main industries that are applicable to the water quality standards update and to this thesis, I will discuss the economic impact of Washington's top employer Boeing, and the industries of timber, tribes, and seafood.

Top employer. While the economy is diverse, Washington is probably most well-known nationally and internationally for its prominent companies such as Boeing, Amazon, Microsoft, and Starbucks. Boeing, an aerospace manufacturing company, currently tops the list in Washington as the State's largest employer employing approximately 82,000 people. The Joint Base Lewis McChord military facility, the second top employer in Washington, employs about two thirds of this amount at 56,000 people. The list of the top five employers are rounded out by Microsoft at a little over 43,000, Navy Region Northwest at 43,000, and the University of Washington at approximately 30,000. Boeing's revenues in 2013 were impressively listed at over \$86 billion dollars (Graves, 2014). It was in this same year that Washington State provided Boeing the largest tax break in US history, worth a savings of \$8.7 billion between 2024-2040, as incentive for Boeing to build its next 777x jet in Washington (Gross, 2015). While the largest, this tax break for Boeing was by no means unique. Washington provided Boeing a \$3.244 billion tax break in 2003 to build its 787 dreamliner in the State (Connelly, 2013). Overall, Washington State currently provides the aerospace manufacturing industry lower business and occupation (B&O) tax rates, B&O credits for pre-production development and property taxes, sales and use tax exemption for computers and software, and retail sales and use tax exemption for new facility construction (Washington State Department of Revenue, WDOR, n.d.a).

Washington has a long history with Boeing as a boom and bust, but highly

significant employer since Boeing's inception in Seattle in 1916 (Myers, 2008) to present, despite Boeing's surprising 2001 move of their headquarters to Chicago. An old and still argued Pacific Northwest saying is "when Boeing sneezes, Seattle catches cold" (Banal, 2015). The large tax breaks (Gross, 2015), the rippling effects of Boeing on the State economy (Gates, 2013), and discussions/fears of additional Washington jobs moving to other Boeing manufacturing centers, such as South Carolina (Jelter, 2014), are widely and frequently discussed in Washington.

Timber industries. Washington's timber industry has a long entrenched history in Washington State, previously holding the position of the State's largest employer. Economic diversification in the 1940s and 50s, diminished timber supplies due to continuing extraction, and increased public concern for conservation of timber resources led to a decline within the industry (Chiang & Reese, 2002). However, despite its diminished role, the timber industry still figures prominently within Washington. Weyerhaeuser (n.d.) is a particularly prominent Washington timber company that was founded in Tacoma, Washington in 1900 and now manages 20.3 million timber acres throughout the world. In 2011, they stated that they were the Pacific Northwest's largest private landowner and employed 3,800 people in this area (Weyerhaeuser, 2011). In 2014, they was Washington's seventh most valuable public company with \$3.7 billion in sales and earnings of \$485 million in the first half of 2014 alone. Currently located in Federal Way, Weyerhaeuser recently announced plans to move their headquarters to Seattle's popular Pioneer Square in 2016 to gain access to Seattle's and the nation's larger talent pool (Garnick, 2014).

In a WDNR 2005 report (dated compared to the other industry surveys discussed

here), the overall timber industry contributed 45,000 jobs and \$16 billion in gross business income to Washington State. A more recent “forest facts and figures” document produced by the Washington Forest Protection Association (2014) places forestry jobs at a much higher 107,455, but is inclusive of direct, indirect, and induced. Direct forest jobs are listed at 39,732. The document also discusses that Washington is the second largest lumber producing state in the nation and that the top counties in the State that provide timber jobs are in Cowlitz, King, Pierce, and Snohomish, all within Western Washington. In regards to tax incentives, Washington provides the timber industry a reduced B&O tax rate for timber extraction and manufacturing (WDOR, n.d.a).

Tribal industries. Washington's 29 Federally recognized tribes contribute to the broader economy through gaming, administration, construction, and other services. A 2010 survey obtained information from 25 of the 29 tribes found that the tribes provided \$3.5 billion of the State gross income and employed over 27,000 people, two-thirds of which were non-Indian. In discussing the broad categories of the tribal-created economy, the gaming industry comprised the majority of these revenues at \$1.7 billion and provided approximately 56% of the employment. The other categories within this report included administration and the very broad category of “enterprises,” the former accounting for 29% of employment and the latter accounting for 15% (Taylor, 2012).

Detailed Washington economic impact studies for tribes at the aggregate are actually rare and thus it is difficult to ascertain the percentage of tribal economic activity that is attributed specifically to seafood or other non-gaming industries. The very first study to analyze the economic impacts of tribes on the Washington State economy, believed to be the first tribal economic impact study of its kind in the US, was

commissioned by the State of Washington in 1997. Twenty-three tribes of the then 27 recognized tribes participated in the survey and the report detailed that the participating tribes provided the previously confidential information in order to combat the perception that tribes did not contribute to State employment, earnings, or taxes in a meaningful way (Tiller & Chase, 1999). While Washington does not provide any specific tax exemptions to tribal industries, Washington State taxes do not generally apply to tribal industries and operations on reservations or trust land due to tribal status as sovereigns. Regular taxes apply to tribal businesses that operate outside of the reservation, with the exception of any income generated through treaty fisheries (WDOR, n.d.b), which may be caught outside of the reservation within usual and accustomed areas .

Seafood industries. In 2010, the aggregate seafood industry contributed to 2.4% of Washington's gross state product. The 2011 US fisheries economic impact study conducted by the National Marine Fisheries Service (NMFS) (2012) estimated that the seafood industries in Washington contributed 27,022 jobs and approximately \$1.8 billion in sales. However, when including imported seafood (which was a recent addition to the NMFS report), Washington seafood industries contributed 67,007 jobs and over \$8 billion in sales, demonstrating the large demand for seafood and the importance of the growing imported seafood trade. In regards to tax incentives, Washington State provides a B&O tax exemption for manufacturers of seafood products that are raw, frozen, or in a raw salted state, which is a similar tax exemption provided to dairy, fruit, and vegetables manufacturers (WDOR, n.d.a).

In relation to other states, Washington was one of the top economic producers of seafood in 2011, ranking only under California and Florida in total sales, inclusive of

imported seafood (Figure 3)¹, In viewing sales of seafood without incorporating the impact of imported seafood though, Washington ranked fourth under Alaska, Massachusetts, and Florida (NMFS, n.d.).

In partitioning shellfish from the larger seafood market, Washington is the leading

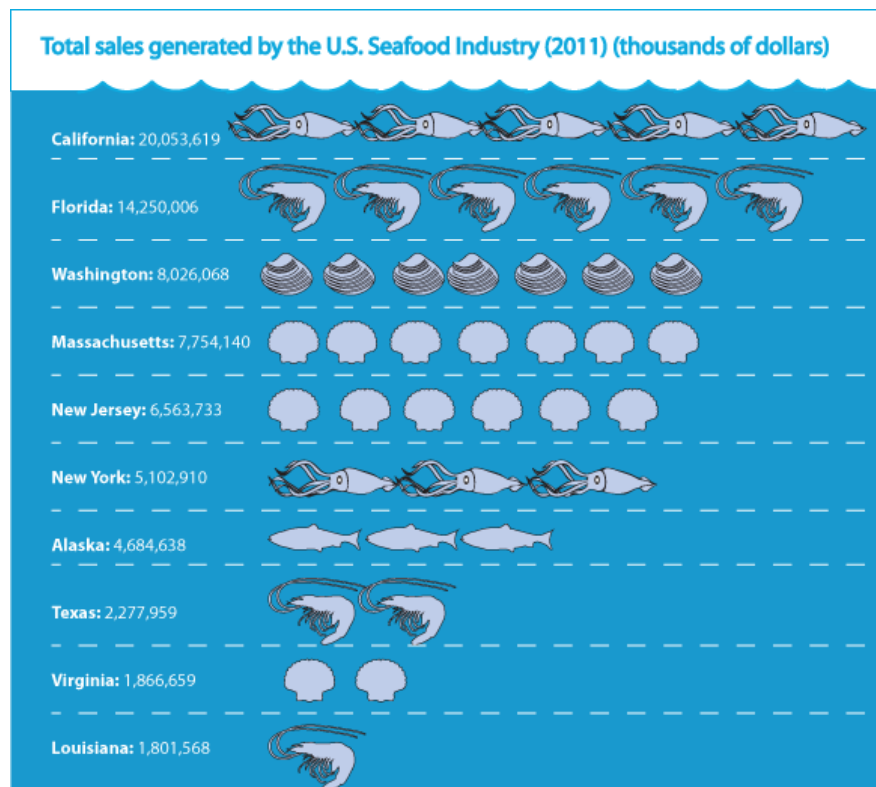


Figure 3. U.S. seafood industry sales by state (NMFS, n.d.).

state producer of farmed clams, oysters, and mussels in the nation. Shellfish growers are the largest private employers in the two Western Washington counties of Mason and Pacific (Washington Shellfish Initiative, 2011). While shellfish is produced within many areas of Western Washington, it was estimated in 2009 that Willapa Bay, an estuary on the coast and just north of the Columbia River, that produced two-thirds of Washington's and

¹ It should be noted that NMFS has released a more recent 2012 Fisheries Economics of the United States Report. However, this report intermeshed the importers such that it is more difficult to determine the overall impact of imported seafood. Within the 2012 report, Washington's total seafood sales were approximately \$7.5 billion, ranking fifth under California, Florida, Massachusetts, and New Jersey.

over 23% of the nation's oysters (Sanford, 2012). Washington State recently advanced the “Shellfish Initiative” (2011), a program modeled off of and produced in collaboration with a NOAA program of the same name to advance the production of shellfish. The first state to create its own Shellfish Initiative, the policy includes directing improved coordination, guidelines, and timelines for permitting, continuing aquaculture research, exploring the possibility of a nitrogen credit system for growers, restoring and enhancing shellfish, encouraging public support for the Initiative, directing \$4.5 million in EPA funds to upgrade shellfish beds, forming an EPA/State pollution action team, and conducting research on ocean acidification.

Conclusion

Above, I have detailed the broad geography, demographics, and applicable economy of Washington State, with a particular focus on Western Washington and broad economic impacts of the top employer Boeing and the timber, tribal, and seafood industries. The water systems within Washington are extensive, including rivers, lakes, estuaries, sounds, and ocean coasts. Western Washington includes all or portions of the major water systems, including the Puget Sound, the Pacific Coast, and the latter ocean-meeting portion of the large Columbia River basin. The vast majority of the population and large industries are within the Puget Sound region and the majority of the farmed shellfish is within Willapa Bay, both within the broader area of Western Washington. The Puget Sound has the majority of the population pressures, but all water areas of Washington have been subject to extensive modifications, habitat degradation, and species loss.

Washington's timber and seafood (and particularly the farmed shellfish) industries

are prominent nationally in relation to revenues and production of these resources within other states. However, while the timber industry held the top employer title historically, Boeing has been a highly significant employer since its inception and is currently the State's largest single company employer. Boeing, by far, receives the most tax support and breaks from Washington State and was even recently the recipient of the largest US tax break in history. These tax breaks were provided to directly ensure their plans to build their next plane within Washington, with the expectation it would keep Boeing jobs within Washington and provide additional jobs. Washington provides the other industries significantly fewer tax exemptions, generally limited to reduced or exempted B&O taxes. Tribal industries are unique in this regard in holding tax exemption status on reservations and trust land, as well as for their treaty fisheries. Outside of tax exemptions though, Washington has provided additional financial, policy, and research support to the shellfish industry through their unique Shellfish Initiative, which demonstrates a commitment to this industry.

Arguably, the type of support provided to Boeing in relation to other industries is proportional not only to the number of jobs they provide, but to the track record and very ability of the industry to leave the State. The timber, seafood, and tribal economies are more strongly tied to Washington's lands and waters than Boeing, with the timber and seafood industries partially reliant on Washington trees and seafood, and tribal industries tied to their reservations and legally recognized usual and accustomed areas.

Weyerhaeuser has diversified in holding many timber lands nationally and internationally, but they still hold significant timberlands and will continue to host their headquarters in Washington. The seafood industries associate a significant percentage of their sales

(~78%) and jobs (~60%) to imported seafood, but Washington seafood still provides a base percentage and it is presumed that a good portion of the imported seafood is being sold to State residents and thus tied here. Conversely Boeing, while originally a Washington company, does not require Washington's specific physical resources and has demonstrated an ability and willingness to move their influential industry out of the State. This ability and willing to leave the State is feared by the State and rewarded through the tax incentives and deference provided.

Historical Context

An important backdrop to the current public debate and struggle over water quality standards is the long and complex relationships between Washington tribes, Washington State, and the Federal government. For brevity, I will not discuss the early colonization years (1492 – 1845) in any depth. For the purposes of providing an applicable but succinct research context for this thesis, I will focus on the treaty signing and pre-fish wars; the fish wars to co-management; the Centennial Accord and Millennial Agreement; and major water quality agreements, forums, and discussions.

Western Washington Treaty Signing to Pre-Fish Wars

After centuries of genocide and warfare throughout the continent and a colonizing policy of manifest destiny, the US Federal government began signing treaties in a generally westward fashion with the native people to obtain native land in exchange for reserved rights. Over 500 hundred treaties were signed with native people (NWIFC, n.d.e) from 1778 to 1871 (BIA, n.d.). Western Washington tribal treaties are situated in the latter portion of this time period, occurring between 1854 and 1855. The Washington Territory was separated from the Oregon Territory in 1853 and due to the combination of plans for

the Pacific Railroad, as well as friction between native people and the ever increasing white settlers, the Federal government commissioned the first governor of Washington Territory, Issac Stevens. Stevens was charged with the order to negotiate treaties with the tribes west of the Cascades in order to remove their title to land (Perron, 2001). In the short period of seven months, Stevens negotiated five treaties² for the hundreds of autonomous native bands (Singleton, 1998), claiming over 64 million acres of land and leaving less than six million acres reserved to the native people (Chrisman, 2006). To expedite the process, these many bands were grouped into tribes and chiefs were appointed as authorized spokesmen. There were tribal representatives that refused to sign the pre-written treaties, which has led to lack of Federal recognition and/or treaty-reserved rights to this day³. For those who did choose to sign, the five treaties share the majority of the same conditions, including lump-sum payments, yearly annuities, infrastructure, healthcare, and fishing rights in exchange for title to their land (Singleton, 1998). The reserved fishing rights were so key to native people though that all five treaties share the exact same passage:

[t]he right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory, and of erecting temporary houses for the purpose of curing, together with the privilege of hunting and gathering roots and berries on open and unclaimed lands. Provided, however, that they shall not take shell-fish from any beds staked or cultivated by citizens. - Treaty of Point Elliot (NWIFC, n.d.e)

It was reported that, during the Point No Point treaty signing, Stevens waved the treaty in

2 These five treaties are the Treaties of Olympia, Neah Bay, Medicine Creek, Point Elliot, and the Point No Point (NWIFC, n.d.d.).

3 There are 29 federally and one State, but not federally, recognized tribes in Washington State. Only 21 tribe's fishing rights were reaffirmed within the Boldt Decision (Singleton, 1998). Throughout the course of this chapter, I will reference these tribes as “treaty tribes” and the NWIFC member tribes as “treaty

the air and told the signing native people, “This paper secures your fish” (Cohen, 1986, p.37 as cited in Singleton, 1998). Emphasizing this point so emphatically underscores not only the importance of the fisheries resource, but also the communication difficulties between the Stevenson and the tribes. All of the treaties were written in English, but negotiated in Chinook Jargon, a native trade language that, at the time⁴, consisted of only approximately 300 words (Singleton, 1998). This point would prove critical in the instrumental court interpretation of these treaties nearly 120 years later.

For many years following the original treaty signing, Washington tribes generally fished unimpeded and, due to their expertise, were the main suppliers of fish to the white settlers. However, large-scale commercial fishing and canning became possible and prominent in the late nineteenth century and were generally dominated by non-Natives. In 1877, the very first US cannery was built in Puget Sound and due to the large abundance of salmon, ignorance of runs, and lack of coordination, overfishing waste was prominent. It estimated that by 1901 both the Puget Sound cannery and the cannery in British Columbia were throwing away as much fish as they were canning (Singleton, 1998). In addition to these fishing pressures, increased damming of rivers (Singleton, 1998), logging, and agricultural activities diminished the habitat that fish relied upon (NWIFC, n.d.e)

The regulation of the fishery by the State, not starting until 1877, was a slow process and based more off of perception rather than actual knowledge of fishing effects or salmon biology. Spearing and snaring methods and fishing in tributaries and rivers,

tribes in Western Washington.”

⁴ Chinook Jargon, also called Chinuk Wawa, is a native pigeon language based in old Chinook and is inclusive of words from other native, english, and french traders. The language is still spoken by many

visible methods and locations generally used by natives, were highly restricted by the State. Native fishers, who were generally located in their traditional river terminal areas rather than the ocean or open water, began to be pushed to the fringes of the fishery. While fishing in the terminal areas is now often considered more efficient than ocean trolling that can capture mixed stocks and immature fish, the former occurs at the end of the runs and thus behind and at the expense of other forms of fishing. The State reported that between 1936-56, native fishers contributed only 1% of Washington's commercial salmon catch.

Given the greatly diminishing fishery, public and State debates continued as to which method of fishing was most exploitative and, in 1934, fish traps were banned and commercial fishing in southern Puget Sound was restricted to gillnets. Purse seining, gillnetting, and ocean trolling continued to grow over the next few decades though and a 1963 study concluded that all of the fishery could be caught by even a half to two thirds of the licensed fishermen. Licenses continued to be issued though and “[b]y resisting the obvious solution of license limitations and relying on time closures and ever more cumbersome gear restrictions, the State was endangering both fisherman and fish stocks” (Singleton, 1998, p.61). A moratorium on licenses was finally issued in 1973 (Singleton, 1998), directly before the 1974 Boldt Decision and in the midst of the fish wars.

Fish Wars to Co-management

Below, I will discuss the contentious legal history of tribal, State, and Federal relations regarding fish and shellfish management and habitat protection in Washington

tribes including Chinook and Grand Ronde and currently has about 1,000 core words (Rhodes, 2011).

State from the beginning of the fish wars in the 1960s to the decree of the Culverts Case in 2013.

The fish wars 1960-70s to the Boldt decision 1974. The fish wars, or the Native civil rights movement of the Pacific Northwest, occurred within the broader 1960s civil rights movements throughout the country. The State, in implementing laws that were discriminatory in restricting tribes, would often arrest tribal fishermen and seize their gear for fishing in their traditional areas. Tribes organized “fish-ins,” similar in nature and intent to “sit-ins” employed by African Americans at the time, to draw national attention to their rights. Well-known celebrities, such as Marlon Brando and Dick Gregory, participated and were arrested in fish-ins, drawing additional and national media attention. The late and NWIFC Chair Emeritus, Billy Frank, Jr., was famously arrested more than 50 times exercising his treaty right to fish. Billy stated that on September 9th, 1970, the State went to a native fishing camp under the Puyallup River Bridge and gassed and threw the tribal fishermen in jail. Billy stated:

[b]ut someone else got gassed that day, too. His name was Stan Pitkin, the U.S. Attorney for western Washington. He was part of the crowd that gathered that day to watch the event unfold. Stan was troubled by what he saw, and quickly took the first steps to file the U.S. v. Washington court case that would lead to the 1974 Boldt decision that upheld our treaty rights. (NWIFC, n.d.e)

U.S. vs. Washington 384 F. Supp. 312 (the 1974 Boldt Decision) was instigated and supported by tribes and their activism, but the court case was officially filed by the Federal government “on its own behalf and as *trustee* for several Western Washington treaty tribes” (*U.S. vs. Washington*, 1974, p.1405, emphasis added). The concept of the Federal government holding a trust

responsibility to protect the rights of tribes was first discussed in a Cherokee Nation suit in 1831 and further defined as a legal obligation in a Seminole Nation case in 1942. While beyond the scope of this thesis to fully discuss, nation-wide shifts before and during this time were occurring on the Federal scale that further defined tribal/Federal relations. Despite the previously recognized trust responsibility, the general policies of the Federal government up until this time were largely focused on subjugation and assimilation of native people (BIA, n.d.)⁵. Native activism at the national level through the National Congress of American Indians and other forums sought to combat the destructive policies though and the 1970s were a turning point for Federal policies and legislation. President Nixon called for an end to termination policies and endorsed tribal self-determination in 1970 presidential statement. The later 1975 Public Law 638 Indian Self-determination and Education Assistance Act codified this shift and it, along with future policies, began a improved era of Federal respect and commitment to the tribal trust responsibility (NCAI, n.d.).

The 1974 Boldt Decision was not the first court case to examine native fishing rights, but it was the most extensive in calling on testimony from expert witnesses, anthropologists, biologists, State officials, and tribal elders. Issues that were to be decided within the court case included the resolution of what specific fishing rights were guaranteed by the treaties, what type of management authority the State had over these fishing rights, whether habitat protection was connected to the right to fish, and whether hatchery fish were included within these issues.

5 Policies including the 1887 General Allotment Act, the 1924 Indian Citizenship Act, the 1934 Indian

The latter two issues were not decided until 1980 in the second phase of the Boldt Decision, but the former two issues were decided within the 1974 Boldt Decision⁶ (Singleton, 1998).

Within the 1974 Boldt Decision, Judge Boldt determined that the treaties should be interpreted on how native people at the time would have understood the language. This was key as the language in which the treaties were written, Chinook Jargon, had a limited vocabulary and “not the sophisticated or implied meaning of treaty provisions about which highly learned jurists and scholars differ” (*U.S. vs. Washington*, 1974, p.330). Judge Boldt determined that the “in common with” language in the treaties would be interpreted that tribes were entitled to 50 percent of the fish that traveled through their “usual and accustomed” areas, in addition to what was needed for subsistence and ceremonial purposes. This was a marked difference from how the State had been managing fisheries, previously providing no fishing rights to tribes off their reservations outside what they provided the general public (Singleton, 1998). Beyond this reaffirmation of tribal fishing rights though, a key determination in the 1974 Boldt Decision was that tribes would engage with the State in “concurrent jurisdiction with regard to regulation of the fishery resource” (*U.S. vs. Washington*, 1974, p.324). Implied within this was that “the treaty's promise that the tribes would share in access to the fish alongside the citizens of the territory was unrealizable without a second and higher-level right being granted: the right to participate in management decisions about how the harvest would be conducted” (Pinkerton, 2003, p.62). However, despite the ruling and

Reorganization Act, and the Indian Tribe termination era of the 1950s (BIA, n.d.).

6 While the 1974 Phase I Boldt Decision is generally referred to as simply the “Boldt Decision,” I refer to it here as the 1974 Boldt Decision in order to differentiate it from the 1980 Phase II Boldt Decision.

Judge Boldt subsequently establishing a Fisheries Advisory Board that included tribal, State, and court appointees to determine allocation decisions, concurrent management was not an immediate or easy process (Cohen, 1989). Pinkerton (1992), in discussing this, rightly states “[t]here can be an enormous distance. . . between legal decisions and their application to the practice of resource management, especially when legal rights run counter to prevailing power relationships” (p.330).

Due to the existing power relationships and the previous discriminatory management institutionalized by the State, the 1974 Boldt Decision was incredibly controversial and the State lagged in and even combated implementation. Slade Gorton, the State Attorney General at the time, called natives “supercitizens” and he and other State officials believed and encouraged others to believe that the decision would eventually be overturned. Three years later, when the State did promulgate regulations to allocate the fishery in a 50/50 split, they were sued by non-native groups. This suit went to the Washington Supreme Court, who attempted to interpret the treaties themselves and then nullify the Federal 1974 Boldt Decision. However, a Federal district court blocked this State decision and took over management of the fishery. Demonstrating the level of contention, the State refusal to implement, and the parallels with the broader civil rights movement, the 1978 US Court of Appeals decision that upheld the Federal district court's decision, stating,

[t]he state's extraordinary machinations in resisting the decree have forced the district court to take over a large share of the management of the state's fishery in order to enforce its decree. Except for some desegregation cases [citations omitted] the district court has face the most concerted official and private efforts to frustrate a decree of a federal court witnessed in this century. (Puget Sound Gillnetters Association v. United States District Court, 753 F.2d 1123 (1978), 1126 (9th Cir.) as cited in Singleton, 1998)

After a request by the State to review, the US Supreme Court upheld the 1974 Boldt Decision in 1979. The vast majority of Judge Boldt's key determinations were upheld, but the Supreme Court decided that the tribal 50 percent catch would include rather than exclude tribal ceremonial, subsistence, and on-reservation catch. The court also determined that the State had authority to intervene in on and off reservation fisheries management when there was a clear conservation need (Singleton, 1998).

Boldt decision phase II 1980. Despite the 1979 Supreme Court review and decision, intense State and tribal conflict persisted and the Federal district court continued to oversee Washington's fisheries (Singleton, 1998). In 1980, the Federal district court Judge Orrick focused and provided a decision on the two habitat and hatchery issues that were not included within the original 1974 Boldt Decision. This *U.S. v. Washington* 506 F. Supp. 187 or Boldt Phase II case, as it is often referred, determined that “[t]he most fundamental prerequisite to exercising the right to take fish is the existence of fish to be taken” (*U.S. vs. Washington*, 1980, p.25). Judge Orrick determined that not only would hatchery fish would be considered the same as wild fish and thus subject to the 50/50 split, but that the treaty fishing rights included an implied environmental right to habitat protection. The case, in discussing the degradation of fish habitat, cited a state/Federal fisheries study that identified five environmental conditions that need to be present to support salmon and steelhead survival, “(1) access to and from the sea, (2) an adequate supply of good-quality water, (3) a sufficient amount of suitable gravel for spawning and egg incubation, (4) an ample supply of food, and (5) sufficient shelter” (1973 Joint Biology Statement as cited in *U.S. vs. Washington*, 1980, p.25).

This court case was nearly as significant as the 1974 Boldt Decision in recognizing that the rights upheld within Phase I meant nothing if there were no fish to catch, particularly important given the greatly depressed fishery. It determined that the State had an obligation to not degrade the habitat and provided tribes the potential power to veto development that could affect salmon habitat. However, this case also went through further review and a future Federal Ninth Circuit Court of Appeals in 1983 upheld the hatchery determination, but limited the power of the habitat decision. The court determined that

[t]he legal standards that will govern the state's precise obligations and duties under the treaty with respect to the myriad state actions that may affect the environment of the treaty area will depend for their definition and articulation upon concrete facts which underlie a dispute in a particular case. (*U.S. v. Washington*, 1983, p.5)

As such, while the overall implied right to habitat protection was still recognized, an important change was that specific habitat degradation cases would need to be litigated between the tribes and the State.

Emergence of co-management. Conflict during this time was so great that tribes and the State litigated not only large disputes, but smaller disagreements for nearly ten years after the 1974 Boldt Decision (NWIFC, 2014). To improve tribal, State, and Federal coordination and increase fish production, congress passed a \$129 million Salmon and Steelhead Conservation and Enhancement Act in 1980 (Singleton, 1998). Overall, a Federal political climate more sensitive to civil rights, general legal fatigue, and specific personnel and tribal/State relationships are often credited for the eventual shift from conflict to co-management. In the latter category, Billy Frank, Jr., chair of the Northwest Indian Fisheries Commission, Jim Harp, and Tim Wapato were tribal leaders who focused

on the importance of cooperation and face-to-face resolution (Dale, 1989). Another person who contributed to the shift was Bill Wilkerson who became the Department of Fisheries Director in 1983. Wilkerson said that within a year of becoming director, he came to the conclusion that “[w]e needed to end the fish war. The Boldt decision had the potential to be the most important and best thing that ever happened to the salmon resource in the state’s history” (NWIFC, 2014). The Director instituted a policy wherein “[s]tate biologists and fisheries managers were told to resolve conflicts with tribal fisheries personnel at the level at which they arose, rather than allowing them to become legal disputes” and also linked promotions within the agency with reaching successful tribal agreements (Singleton, 2000, p.7).

The State and tribes organized multiple retreats and face-to-face meetings known as the Port Ludlow meetings that proved critical to increasing trust between the governments (Singleton, 1998). The tribes and State then managed the 1984 fisheries season collaboratively, also negotiating the Canada-US treaty for fisheries management (NWIFC, 2014). After jointly signing the Puget Sound Salmon Management Plan in 1985, harvest management implementation court cases between the State and tribes became much more rare. This agreement included data sharing, hatchery production goals, run size estimates, joint-planning retreats, and conflict management mechanisms, among other agreements (Pinkerton, 1992).

Timber/fish/wildlife agreement 1987. In the midst of the above fisheries allocation conflict and burgeoning co-management, the habitat protection rights included in 1980 Boldt Decision Phase II instigated a prototype decision-making forum between tribes, the State, industry, and environmental groups to discuss detrimental forest

practices impacts on salmon habitat. With the overall intent of avoiding litigation, these processes, including the Northwest Water Resources Committee formed in 1982 and the Northwest Renewable Resources Center in 1984, involved a different set of State agencies and industries, now including the timber industry and their State regulators Washington Department of Natural Resources (Natural Resources). Pinkerton (1992) points to Natural Resources before and during this time as a “captured agency” due to its mandate to log and profit from State forestlands for its own budget and public school construction. Due to these practices, as well as the timber industry's influence over the legislature, Natural Resources was slow to regulate the timber industry for fish and wildlife protection as their relationship was more friendly than authoritative. Despite this collegial relationship with their regulators and power in the legislature, the timber industries met with the tribes relatively quickly after the 1980 Boldt Phase Decision Phase II. Pinkerton lists the reasons for why the timber industries, relative to the State in the 1974 Boldt Decision, were quick to meet with tribes, stating,

[w]hile the income of government officials usually does not depend on the outcome of court rulings or policy decisions, businessmen's standard of living, or their stockholders' profits, often depend completely on such matters. Hence they are quicker to seek out-of-court solutions, but are also likely to seek to postpone costly effects, while seeking ways to re-capture the institutions they are losing through court battles. (p.332)

As such, despite being initially willing to meet and discuss habitat degradation issues with tribes, it took a few years for the timber industry to sit down with tribes, environmental groups, and others to develop a power-sharing agreement.

Pinkerton (1992) points to the combination of an environmental/tribal/State agency coalition, legislation and threatened legislation, threat of public review and greater

regulation by a citizen's Forest Practices Board, and environmental lawsuits as successful strategies that encouraged Natural Resources and the timber industry to implement a timber management agreement. Included within the environmental, tribal, and State agency coalition were the agencies of Fisheries, Game/Wildlife⁷, and Ecology, the former two agencies holding a new and relatively positive relationship with tribes due to the 1974 Boldt Decision co-management progress. In looking specifically at the environmental and tribal relationships, Pinkerton (1992) discusses their complementary skills and how the tribes, despite their greater legal position, would not have been as successful without the environmental groups in convincing the public that they were protecting the resource due to perceptions of a tribal economic gain from an increased fishery. Working together though, "they were able to make the linkage that protecting tribal resources is the same as protecting public resources, and to use far more forcefully the arguments about protecting the spiritual values associated with natural resources" (p.338). Tribes, environmental groups, four State agencies, and the timber industries met in July 1986 and spent six months and 60 meetings crafting the Timber/Fish/Wildlife Agreement.

The Timber/Fish/Wildlife Agreement included a new management system for Natural Resources, regulatory change recommendations to provide to the Forest Practices Board, increased monitoring and research, and more effective enforcement to better protect riparian zones and other habitat (Washington State Department of Natural Resources, WDNR, 1987). The Timber/Fish/Wildlife Agreement was never officially

⁷ Prior to 1994, the current Department of Fish and Wildlife was separated into two different state agencies, Fisheries and Wildlife. I've referred to the Department of Wildlife as Game/Wildlife here as it was during this time in 1987 that the legislature changed the name of the Department of Game to the Department of

signed and Pinkerton (1992) points to a tribal desire to keep the option open to re-litigate the 1980 Boldt Decision Phase II decision as a reason for this. The Agreement was considered official policy though and State, Federal, and private funding for implementation of the Agreement was secured about a year later to support group member review of forest practice (logging) applications.

Memorandum of understanding on environmental protection 1989-1990. The State and the tribes decided to memorialize their commitment to collaboration by engaging in a year-long Memorandum of Understanding on Environmental Protection. The Memorandum summarized the 1974 Boldt and 1980 Boldt Phase II decisions and provided both tribal and State concerns and goals regarding habitat protection. In regards to the latter, it also included an understanding that both parties would engage in review of habitat protection, restoration, and enhancement policies to determine if new or modified processes were needed. The Memorandum was based in the spirit of cooperation and stated,

[t]he parties of United States v. Washington recognize the potential for litigation of the Phase II issues in either the general or specific sense. However, the parties have learned that the benefits of cooperative resolution of disputes may exceed those obtainable through litigation. The Tribes have expressed an interest in working cooperatively with the state in habitat and water protection matters, rather than pursue this expensive and time consuming litigation. (1998)

While focused on collaboration and the desire to avoid further litigation, the Memorandum included the caveat that it did not limit any party's rights, including administratively, judicially, or legislatively. The Memorandum set an end date of June 30th, 1990, with both parties to communicate on their progress during and before that

date. As there is no record of a further Memorandum, it is assumed that this agreement was not continued.

Chelan agreement 1989-1995. Following in the steps of both the Timber/Fish/Wildlife Agreement and the in-progress Memorandum of Understanding on Environmental Protection, tribes, the State, and other stakeholders began to discuss water allocation management in 1989, with the tribes concerned with adequate flow in streams and rivers necessary for fish survival (Brown, 2008). Tribes, Ecology, agricultural industry, hydroelectric industry, commercial fishing groups, and environmental groups among others gathered for a two day retreat at Lake Chelan in late 1990 and created the Chelan Agreement, which was finalized four months later in March, 1991. The Agreement made reference to the 1980 Boldt Decision Phase II litigation and the Memorandum of Understanding on Environmental Protection, stating that the Agreement was a cooperative approach to protect, enhance, and restore fisheries habitat, not a settlement of 1980 Boldt Decision Phase II or limiting any party's legal rights. The Agreement set up the Water Resources Forum to be staffed by members of all groups to shape, clarify, and provide policy recommendations through consensus. It also selected two pilot projects that focused on watershed planning in the Dungeness-Quilcene and Methow River (The Jamestown S'Klallam Tribe [JSKT], 1994).

Tribes, in general, were laudatory toward the Chelan Agreement, calling it a government-to-government process, a “model for comprehensive water management planning nationwide,” and that it “maintains tribal sovereignty, as it effectively utilizes limited resources, and it is an agreement built upon an open, public process” (NWIFC, 1990, p.29 as cited in Brown, 2008, p.12). However, the legislature did not provide

funding or endorsement for the Agreement, Ecology was hit by budget cuts during this time, and staff turnover was an issue (Brown, 2008). In the final water resources plan for the Dungeness-Quilcene pilot project, interviews with members of the regional planning group were included that spoke to issues with the process. Many interviewees, including the tribes, spoke to the extensive amount of time that was required, that the issues often were not focused enough, and that participation was an issue, particularly as they were not compensated. Many spoke positively of the relationships and trust that were built, but the agriculture representative stated that

[t]here was always the feeling that our rights were being threatened. The finger was pointed at Ag., logging, and development as being the main reason for lack of fish. . . [I felt as though I was] just doing the homework for the Tribes before they go to court. I do hope we don't end up in court though. (JSKT, p.14.39)

In regards to the broader Chelan Agreement, certain members, particularly the business and agricultural industries, did not believe their interests were being properly served. These industries left the Agreement in 1994 and the Agreement was ostensibly terminated in 1995 (Brown, 2008).

Rafeedie decision 1994. *U.S. vs. Washington* 873 F. Supp. 1422 (Rafeedie Decision) in 1994 was another landmark case that determined that the 1974 Boldt Decision was inclusive of shellfish. Similar to Judge Boldt, Judge Rafeedie interpreted the treaties in their “historical context” to reflect how native people would have understood the treaty language at the time. Judge Rafeedie found not only were shellfish included within the 1974 Boldt Decision, but that the sentence in the treaties (the “shellfish proviso”) that native people could not take shellfish from “staked or cultivated” beds was ambiguous and would only apply to artificial or cultivated shellfish beds, not

natural or native beds. He stated that any hardships (costs) incurred from the court ruling should be obtained from the “State of Washington, which sold the public tidelands without notice to the buyers of the pre-existing tribal fishing rights, and indeed the United States, which permitted such sales to occur without taking steps to secure fishing rights” (Rafeedie Decision, 1994, p.4). This ruling was controversial and continued litigation occurred to not only uphold the tribal right to harvest half of the natural shellfish on private lands, but for the courts to create an implementation plan between the tribes and the State. It was within a 1995 case, also judged by Rafeedie, that the need for tribal/State “cooperative management” was detailed and the first Shellfish Implementation Plan was developed (Shellfish II, p.16).

The State and non-native Puget Sound shellfish growers appealed the rights of tribes to harvest on private land, but the U.S. Ninth Circuit Court of Appeals upheld Rafeedie’s Decision in 1998 and the U.S. Supreme Court rejected the appeal to review in 1999 (Campbell, 1999). The Ninth Circuit determined that the District Court needed to be further discuss and clarify the specifics of the 1995 Implementation plan and Judge Rafeedie issued a Revised Implementation Plan in 2002. However, implementation continued to be highly contentious and difficult, with issues of access and costs largely unresolved. Tribes, the State, and commercial shellfish growers, in an attempt to avoid further litigation, negotiated a Commercial Growers Settlement in 2007. In this Settlement, tribes relinquished their rights to the naturally occurring shellfish on commercial shellfish beds estimated at approximately \$2 million dollars in exchange for commercial growers spending half a million over a 10 year period to improve public tidelands and the Federal and State providing \$33 million to 17 treaty tribes in Western

Washington for tidelands enhancements and acquisition (NWIFC, n.d.a). The Settlement was largely praised by the press and participants of the negotiation, with Bill Dewey, one of the commercial shellfish growers stating, “[i]t ends 18-some-odd years of litigation and fighting with the tribes and allows us to mend our relationships with the people who are our neighbors” (Mapes, 2007, para. 8).

Martinez decision (culverts case) 2007. Initiated first in 2001 by the 21 treaty tribes, *U.S. vs. Washington* WL 2437166 (Martinez Decision) ruled that the State was required to repair or replace salmon migration impeding culverts. Judge Martinez determined that state-owned culverts, in preventing fish passage and degrading habitat, had contributed to reduced fish runs and populations for tribal harvest. More popularly known as the “culverts case”, the Martinez Decision in 2007 was the first specific habitat protection litigation case to be tested under the 1980 Boldt Decision Phase II. As previously described, the Ninth Circuit Court of Appeals had ultimately determined in 1983 that while the tribes had a legal right to habitat protection, the details and requirements of stopping the State from degrading fish habitat would come down to the “concrete facts” of particular habitat protection case. While the State argued that the tribes were attempting to create an “environmental servitude,” Judge Martinez determined that

[t]he State’s duty to maintain, repair or replace culverts which block passage of anadromous fish does not arise from a broad environmental servitude against which the Ninth Circuit Court of Appeals cautioned. Instead, it is a narrow and specific treaty-based duty that attaches when the State elects to block rather than bridge a salmon-bearing stream with a roadbed. (Martinez Decision, p.35)

Judge Martinez issued an injunction and set a court date for later that year to

discuss how this would be remedied, but both the tribes and State decided to negotiate on their own and postponed the court date (Blumm & Steadman, 2009). However, timed next to a major recession, the State was not willing to pay for the repairs that were estimated in the millions and negotiations stalled in 2009 (Breslow, 2011). Four years later in 2013, Judge Martinez ordered the State and the tribes to provide the court a status update (United States v. Washington, Case No. CV 70-9213). After receiving this update, Judge Martinez issued a permanent injunction against the State and provided the State's Department of Transportation 17 years to complete the culvert repairs (NWIFC, 2013).

The Martinez Decision has been heralded as a precedent-setting case for the tribal rights to fish habitat protection in Washington under the 1980 Boldt Decision Phase II process. Breslow (2011) states "with its implication for habitat protection the treaty fishing right potentially constitutes the most powerful legal tool available to protect salmon in this region" (p.11). The State is currently in the process of appealing this Decision (NWIFC, 2013).

Centennial Accord and Millennial Agreement

In addition to above court cases and decision-making forums that are specific to or instigated from fisheries allocation and habitat protection, the State has developed policies that recognizes the sovereign status of tribes and details how it will work with tribes on a government-to-government basis. The Centennial Accord was signed in 1989, which was followed by the updated Millennial Agreement in 1999.

The Centennial Accord 1989. The Centennial Accord was a follow-up to a January 3rd, 1989 gubernatorial proclamation reaffirming that the State would work with tribes on a government-to-government basis. The Accord was between the then 26

Federally recognized Washington tribes and the State and was designed to build confidence between the parties, improve communications, facilitate issue resolution, and affirm the sovereign status of the State and the tribes. It additionally set out to institutionalize the Accord through implementation plans for each of its agencies, stating,

[t]he parties recognize that in state government, accountability is best achieved when this responsibility rests solely within each state agency. Therefore, it is the objective of the state that each particular agency be directly accountable for implementation of the government-to-government relationship in dealing with issues of concern to the parties. (Governor's Office of Indian Affairs, GOIA, 1989, Section IV, para. 5)

Showing the extent of Washington State agencies, there are 26 separate Centennial Accord implementation plans wherein the specific relationship between the agency and Washington tribes are discussed. Markedly, the only implementation plan that includes reference to a co-management relationship with tribes is the Department of Fish and Wildlife's (Fish and Wildlife), the numerous forums for which are listed under their "consultation" section (Washington State Department of Fish and Wildlife, WDFW, 2012). The rest of the State agency Accord plans vary in regards to their consultation processes and services provided to tribes (GOIA, n.d.). Ecology's consultation process states that consultation with tribes will happen independently of public participation processes, that tribes will have equal access to public participation processes, and that Ecology will invite tribes to participate in advisory groups and to consult on a government-to-government basis for major rules or policies. Ecology states "[c]onsultation means more than simply informing affected tribes about what the agency is planning to do. Consultation means respectful, effective communication that works toward a consensus before a decision is made or an action is taken" (WDOE, n.d.h, p.2).

The Millennial Agreement 1999. The Millennial Agreement, signed ten years after the Centennial Accord, was designed to strengthen the 1989 Accord through a continued commitment to cooperation and by providing a consistent institutionalized approach and relationship for working on a government-to-government basis. The Agreement's implementation guidelines included a consultation process, dispute resolution process, a commitment to completing tribal and State agency Centennial Accord Plans, and detailed roles and responsibilities.

Prior to the November summit in which the Millennial Agreement was formed, a report was produced in 1999 (Prothro) to assist this meeting that focused on relationship challenges between Washington tribes and the State. An independent contractor interviewed both tribal and State representatives to ask them about tribal/State relations in economic development, natural resources, general governance, and cultural, social, law enforcement, and education issues. Focusing on the general governance and natural resources sections of the report, tribes and the State interviewees identified major concerns in communications and dispute resolution, but a repeated desire for collaborative relationships and a lament for litigation due to the hard feelings, costs, and delays it had caused.

Within the natural resources section, the contractor describes how the tribes and the State used the words consultation, cooperative management, and co-management with different meanings and context. The State interviewees stated that co-management was not a legal doctrine, but was often considered to be so by tribes. Many tribal interviewees stated that the State often gave "lip service" to co-management and that there was no agreed upon meaning or implementation of co-management. State interviewees instead

believed that “co-management is an agreed-upon approach for harvest and hatcheries management, it is not applicable to management of fish populations or habitat - responsibilities for which joint recovery plans must be developed, involving many parties, including Tribes” (Prothro, 1999, p.10).

The State interviewees also expressed that they were concerned that tribes would not “come to the table” for important policymaking with other stakeholders, but expected a veto power after the fact. Related to this, some State interviewees stated, despite the expectation of the tribes, they could not give “one group, such as Tribes, decision-making authority over other groups in society” (p.11). Tribal interviewees conversely stated that they did not expect veto powers, but for the State to jointly create rules and policies with the tribes. Other State interviewees acknowledged that the State had recognized that the tribes had co-management rights, but did not reach out to them and thus the tribes had to litigate in order to re-establish the right. Both State and tribal interviewees pointed to the need for better forums for tribal/State discussions and an understanding and implementation of co-management as it related to salmon recovery.

Water Quality Forums

In moving beyond the above tribal/State conflicts, court cases, agreements, and accords that describe the complicated and diverse Federal/state/tribal relationships, I will briefly discuss the water quality-specific Coordinated Tribal Water Quality Program and the tribal comments on Washington’s previous water quality standards.

Coordinated tribal water quality program 1990. Supported by Federal EPA funding, the 27 Federally recognized tribes developed the Coordinated Tribal Water Quality Program (CTWQP) in 1990 (NWIFC, 2004). Within the request to Congress and

EPA, the tribal proposal sought funding for a cooperative watershed approach to address the water quality pollution that threatened fish, wildlife, and other natural resources. The proposal outlined stages of the program including interviews with tribal policy makers and technical staff to identify issues and actions, infrastructure for each tribe, and support costs to address water quality issues, extend and maintain water quality programs, and extend water quality education efforts. The proposal also stated that all of the tribes have “recognized management and co-management rights that extend to nearly all of the main watersheds and marine waters in Washington State” and that while the tribes had these legally affirmed property rights in these watersheds “tribes feel these [water quality] issues must be resolved cooperatively and in partnership with Federal, State and local governments rather than through litigation” (Resources, United States, 2013, p.292). In emphasizing this resolve, the tribes cited the Pacific Salmon Treaty, Timber/Fish/Wildlife Agreement, the Centennial Accord, the Puget Sound Water Quality Authority, among others as examples of the cooperative tribal/State resource management that was occurring within Washington State.

In 2004, the CTWQP discussed their program as a model EPA/tribal partnership that had created tools for increased coordination between state agencies, tribes, and the EPA; a tribal water quality database and standards template; a state/tribal 303(d) strategy; and a design manual for creating a coordinated tribal water quality program (NWIFC, 2004).

Previous water quality standards. Washington’s previous water quality standards processes for 2003, 2006, and 2011, including the official public comments and Ecology responses are available online. I will briefly discuss the tribal comments and

Ecology responses within these updates as captured within Ecology's official responsiveness summaries.

2003 water quality standards. The 2003 water quality standards update focused on editing freshwater uses and criteria, creation of an antidegradation implementation plan, revising temperature criteria and adding aquatic life uses for two species of fish, and revising bacteria and ammonia criteria (WDOE, 2003a). In addition to an extensive suite of technical comments regarding monitoring, temperature criteria, and antidegradation, many tribes and tribal representatives issued comments to Ecology asserting their role as co-managers of fish and shellfish and commenting on the lack of and/or recommending a co-management role with Ecology in determining water quality standards. Wilshusen recommended Ecology insert a general statement that they were committed to *consulting and co-managing* with tribes. Ecology responded that they were committed to *consulting* with tribes and had included language to consult when changing designated uses. Squaxin Island Tribe stated that the decision process for the antidegradation policy was vague and did not include the tribes as *co-managers*. Ecology (WDOE, 2003b) included within their response that “Ecology is always willing to look for *meaningful and legal roles for the tribes* in our review processes, and antidegradation is no exception” (p.89). Tulalip Tribes and Puyallup Tribe of Indians recommended collaboration with tribal *co-managers* in conducting use attainability analyses. Ecology responded that all use attainability analyses would include tribal *consultation*.

While the majority of water quality standards comments were addressed by Ecology individually, Ecology included comments grouped by theme at the end of the document that Ecology addressed en masse. Nestled between the comments on forest

practices and local businesses and communities was a tribal rights comments section. Ten tribes and one tribal consortia provided comments that ranged from stating the water quality standards would endanger tribal treaty rights and salmon runs to multiple tribes asserting that tribes must be recognized as aquatic resource co-managers and not just stakeholders. Squaxin Island Tribe commented that Ecology had attempted to insert tribal consultation into certain sections, “but tribal consultation isn’t something that should be reserved for certain key receivers in the document. It’s kind of an umbrella that should wrap around the entire process” (WDOE, 2003b, p.183). Tulalip Tribes stated that the water quality standards “legally puts the state on a collision course with the Tulalip Tribe over our tribe’s ability to protect and manage tribal waters and resources” (p.183). Ecology officially “noted” these comments, recognized that tribes needed to be involved in decision-making, and reiterated that tribal consultation would be included within use attainability analyses and was included in the rulemaking. Ecology submitted their water quality standards to EPA for review after being adopted by Washington in August, 2003.

2006 water quality standards. The 2006 water quality standards, while delineated by Ecology as a separate rule process, was actually a revision of the 2003 standards that were partially disapproved by EPA in 2006. Within their first letter to Ecology, the EPA (2004) pointed to their obligations to both tribal consultation and the Endangered Species Act in needing additional analysis on fish distribution and timing. EPA ultimately disapproved the portions of the water quality standards as they determined that certain stream and river criteria did not protect salmon and bull trout (WDOE, n.d.g.). EPA, in disapproving portions of the standards, provided Ecology information on what corrections were needed for EPA approval. Ecology then incorporated these comments in a

supplemental revision (WDOE, 2006).

The 2006 responsiveness summary contained substantially fewer tribal comments. Environmental groups, Northwest Indian Fisheries Commission, Fish and Wildlife, US Fish and Wildlife, and Squaxin Island Tribe collaboratively commented: “We support the rulemaking and encourage Ecology to move swiftly to review the adequacy of the dissolved oxygen criteria in protecting incubating salmonids” (WDOE, 2006, p.7). This same governmental/tribal/environmental group provided comments that Ecology should create a system to quickly incorporate new fisheries information into new water quality standards. Ecology responded that they appreciated the support, would be reviewing dissolved oxygen criteria, and welcomed working with the tribes, State, and Federal agencies to incorporate new fisheries information. Squaxin Island Tribe also discussed comments they raised on recommended revisions to marine water designations to which Ecology (WDOE, 2006) favorably responded they looked “forward to working with the tribes to identify issues that need resolution in the state standards during future rulemakings” (p.7).

2011 water quality standards. The 2011 water quality standards update was brief and focused on correcting narrative errors and providing clarification that the State water quality standards applied to Puyallup reservation fee lands. As state water quality standards do not generally apply to tribal reservation surface waters, this caveat and clarification was included as unique to the Puyallup Tribe due to a specific 1989 land claims settlement. Tribal comments were non-substantive and restricted to correcting a stream name error (WDOE, 2011b). While not included within their official responsiveness summary, Ecology received tribal (NWIFC, 2012b) and EPA comments

during this review recommending an increased fish consumption rate. EPA Region 10 provided comments to Ecology reminding them that Washington was one of the few states to still use human health criteria mandated by the National Toxics Rule. They stated that EPA did not believe that a 6.5 grams/day fish consumption rate was accurate for Washington's fish and shellfish consumers, pointing to their revised 2000 human health methodology that recommended states use local fish consumption rate data when it was available. The letter stated that “EPA urges Ecology to make the revision of Washington's human health criteria the most important priority in this Triennial Review” (as cited in Brimmer & Baca, 2013). While not incorporated into the standards at that time, Ecology determined that they would include within their five year plan the creation of Washington-specific human health criteria (Sturdevant, 2012b).

Treaty Rights at Risk 2011

Treaty Rights at Risk (TRAR), while not a tribal/State or tribal/Federal program, process, or court case, is pertinent to this research context due to the treaty tribes' focused intent and call-to-action within it on habitat protection. TRAR emphasizes that tribal treaty rights to harvest fish and shellfish are severely threatened due to habitat degradation that is occurring at rates faster than habitat protection and restoration. Key arguments within TRAR are that disparate measures are being applied to tribes, specifically restrictions and reduced harvests on Endangered Species Act fish, that salmon habitat must be equally considered and protected, and that additional Federal oversight and coordination is necessary to protect treaty rights and salmon.

In arguing that loss of salmon habitat contributes more to the decline of salmon than current harvest, the tribes focus on habitat degradation that Federal agencies allow,

stating: “In failing to protect salmon habitat, the Federal government is failing in its trust responsibility to honor its treaties with the tribes” (TRAR, p.8). Specific examples of this failure are provided within TRAR, including the Federal government protecting orca only through reduced Chinook harvest and not equally considering habitat degradation and toxic contamination's effects, Federal funding of the Shoreline Management Act and Corps nation-wide permit system that allow habitat degradation, and Federal conservation programs providing grants that do not implement the Clean Water Act. They go on to state: “Not since the darkest days of the fishing rights struggle before Judge Boldt’s decision in U.S. v. Washington have we feared so deeply for the future of our treaty rights” (p.8). TRAR ends with a call for Federal leadership and action to protect salmon and tribal treaty rights.

Conclusion

Tribal, State, and Federal relationships over management of fish and shellfish resources and habitat in Washington State are complex, far-ranging, and have including varying degrees of conflict, litigation, collaboration, and co-management. The fish wars were a lightning bolt for tribal fishing and management rights within Washington State that were made possible through native and public activism, as well as a changing mentality at the Federal level toward honoring their trustee responsibility to tribes. Through the 1974 Boldt, 1980 Boldt Phase II, Rafeedie, and Martinez Decisions, the Federal government has repeatedly ruled in favor of tribal treaty rights. However, the tribal/State relationships prior to the majority of these court cases were highly contentious and there has been a repeated pattern of the State engaging in extension litigation and multiple appeals before decisions are largely upheld at the Federal Ninth Circuit or

Supreme Court level. The post-trial resolution and implementation process has also been incredibly contentious due to the prevailing power relations between the tribes and the State, as demonstrated by the decade of discord after the 1974 Boldt Decision and the need for the court-mandated implementation orders of Judge Rafeedie and Judge Martinez.

In the 1980s following Boldt Phase II, a combination of court weariness, key personnel and tribal/State relationships, and a shifting political climate did lead to a marked difference in how the State and the tribes interacted, co-managed fisheries allocation, and attempted to collaborate on habitat protection. Within this decade and stretching into the early 90s, there were multiple collaborative processes such as the Timber/Fish/Wildlife agreement, the Memorandum of Understanding on Habitat Protection, the Centennial Accord, and the Chelan Agreement. All of these processes and agreements stressed collaboration and often included within the agreements an explicit desire and goal for tribes and the State to avoid court.

In discussing the recent Martinez Decision, Blumm and Steadman (2009) state “the tribes have exercised remarkable restraint over the past few decades, exploring negotiation and co-management strategies rather than litigation” (p.705). The majority of the state/tribal collaborative processes detailed above, with the exception of the Chelan Agreement, have grown and continued to evolve to present. For example, the split fisheries allocation and legally backed concurrent jurisdiction, the latter included as a broad concept within the 1974 Boldt Decision but eventually embraced by Fish and Wildlife and the tribes to keep their fisheries out of Federal courts, has evolved into a highly complex co-management system. Each year, tribes and the State participate in

months of negotiations through the US/Canadian Pacific Salmon Commission meetings; Washington, Oregon, and California Pacific Fisheries Management Council process; and tribal/State North of Falcon meetings to collaboratively forecast abundance, set allocations, and adaptively manage the fisheries (NWIFC, n.d.c). Additionally, the Timber/Fish/Wildlife Agreement's participants, in concert with Federal and local partners, went on to create the Forests and Fish Report providing recommendations for greater adherence to the Endangered Species and Clean Water Acts, protection of salmon habitat, and the need for tribal involvement in rulemaking and management, while concurrently taking into account the timber industry's economic needs (Hotvedt, n.d.). The significant Salmon Recovery Act of 1999, often referred to as the Forests and Fish Law, followed this report and the Forest and Fish Reports goals were incorporated into the State's board for forest practices.

Additionally, tribes have a history of joining and benefiting from coalitions with the public and environmental groups. Public support for the fish wars activism was crucial in raising the issue nationally and environmental group support was key to the Timber/Fish/Wildlife agreement.

Despite these collaborations, court cases occurred in the 1990s and 2000s to clarify that the 1974 Boldt Decision included shellfish and to test the habitat protection rights stipulated in Boldt Phase II. The report on tribal/State relations that was conducted before the Millennial Agreement, the majority of the Centennial Accord implementation plans, and the 2006 water quality standards comments demonstrate the wide gap between State and tribal perceptions on the rights, extent, and meaning of tribes as co-managers of the fish and shellfish resources. The State's many agencies are directed to interact with

the tribes on a government-to-government basis, but the only State agency that regards the tribes as co-managers is Fish and Wildlife, which has been legally instructed by Federal courts to engage in co-management with tribes. The State agency Centennial Accord implementation plans and the State interviews prior to the Millennial Agreement point to how the State sees this as a distinction. The tribes however, when discussing tribal/State relations prior to the Millennial Agreement and within the 2003 water quality standards, repeatedly assert their role as co-managers and refer to their status as such in requiring meaningful consultation and collaboration on habitat protection issues.

The tribal shift in 2011 under TRAR further demonstrates this focus on habitat protection, but with a concentration on the Federal agencies to uphold their trust responsibilities. Given the previous Federal court actions that provided the legal backing for concurrent fish and shellfish jurisdiction and management with the State, the in-progress Federal support for forcing the State to protect salmon habitat via culvert repairs, and the EPA's disapproval of the State's 2003 water quality standards for not adequately protecting stream and river habitat for salmon and bull trout, this concentration on Federal rather than State action is not surprising. Tribes are continuing to pursue Federal support to fight for increased habitat protection as they have found that Federal courts and action have been a key catalyst to encourage/force State collaboration to occur.

CHAPTER IV

WATER QUALITY STANDARDS HISTORY AND CURRENT CRITERIA

Introduction

Three complex layers of regulation form the complicated and dense background of the current water quality standards debate, including the Federal Clean Water Act, the EPA water quality standards guidance and criteria, and Washington State's current water quality standards. I will outline the pertinent portions of this regulatory framework and guidance below, and, for further context, include a brief section on the status of water quality standards of other states.

The Clean Water Act

The official beginning of Federal law intervention in regulating and protecting water quality was the Federal Water Pollution Control Act in 1948. This Act encouraged water quality control and provided Federal authority to engage in research, investigations, and surveys (Poe, 1995). While a start, this law provided little in the way of funding, specific details, and Federal enforcement authority. Subsequent laws that focused on clean water and pollution control were adopted in 1956 and 1965, with the latter including the need to adopt water quality standards with plans for "interstate waters." It was not until the Federal Water Pollution Control Act Amendments of 1972 though that the current blueprint for US water quality standards emerged and an actual regulatory system for preventing pollutants was created (EPA, n.d.k.). This 1972 Amendment, better known by its later moniker "The Clean Water Act," expressed two explicit national goals to:

1. Stop all pollution/emissions into “navigable waters” by 1985; and
2. Ensure that water quality was sufficient by 1983 to provide for recreation in and on water; and the propagation or continued survival of fish, shellfish, and wildlife (Clean Water Act of 1972).

The latter goal remains the most famous and often cited, referred to as the “fishable/swimmable” goal. The ambitious Clean Water Act's 1983 and 1985 deadlines were not met, but it did create a lasting regulatory system that provided EPA additional authority. It laid out a structure for regulating pollutants through the National Pollutant Discharge Elimination System (NPDES) including a requirement for technology-based effluent (pollution) limits, instructed water quality standards to be extended to intrastate waters, and provided funding for sewage treatment plants. Perhaps, most importantly, it specified that it was illegal for any person to pollute navigable waters without a permit (EPA, n.d.g.). While the 1972 Amendment explicitly determined that the EPA (known within the amendment as the “Administrator”) would administer or hold the regulatory authority of the Clean Water Act, the rights of states were also preserved, with the amendment stating congress would “recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this Act” (Federal Water Pollution Control Act Amendments of 1972, p.816).

This extensive Act was further amended in 1977, which gave the Act its well-known title (EPA, n.d.b.), 1981, and 1987, with the latter a significant amendment that included an antidegradation policy to protect high quality waters; additional teeth for toxics control requiring states to develop actual numeric criteria for toxic pollutants, rather than the previous narrative and non-binding criteria of “no toxics in toxic

amounts;” additional procedures for tribal water quality standards and resolving state-tribal disputes (EPA, n.d.k.); and the establishment of a nonpoint source management program, more often known as the 319 Fund, to provide states, territories, and tribes grant funding to address nonpoint source pollution (EPA, n.d.c.).

While the Clean Water Act and its amendments created the policy and overarching guidelines, specific regulatory requirements and guidance were also developed by EPA to help states comply with the evolving statute. EPA’s first *Water Quality Standards Regulation* that provided this guidance was produced in 1975. Created before the extensive 1977 amendments to the Clean Water Act, this guidance did speak to an antidegradation policy, but contained only minimal requirements in regards to determining water uses and water quality criteria and omitted any guidance on toxics. Recognizing this previous guidance’s limitations in the face of the evolving Clean Water Act, EPA amended and strengthened the *Water Quality Standards Regulation* in 1983, which still stands as the official regulation today. This 1983 regulation allowed states and tribes to establish subcategories of designated uses, allowed for the recognition that certain circumstances (e.g. naturally occurring concentrations of pollutants) could mean that it was infeasible to achieve a designation, provided allowances for water quality criteria in regards to site-specific conditions and scientifically defensible methods, and allowed for certain amount of state discretion in implementing standards (e.g. variances, low flows, and mixing zones). The 1983 *Water Quality Standards Handbook* and 1985 *Technical Support Document for Water Quality Based Toxics Control* were subsequently released to provide additional guidance for implementation. Like the Clean Water Act

itself, the *Water Quality Standards Regulation* and support documents were amended in subsequent years to be more expansive and descriptive (EPA, n.d.k.).

The 1992 National Toxics Rule serves as an additional EPA rule of particular note to this thesis as it was created and implemented to help/force states to comply with the additional toxics control teeth contained in the 1987 Clean Water Act amendment requiring states to include sufficient numeric criteria for toxics within their water quality standards (EPA, n.d.k.). The National Toxics Rule required the 14 “states,” including Washington, that were deemed out of compliance with the Clean Water Act in regards specifically to toxics control to adopt minimum human health criteria that included controls for 84 toxic criteria, including such toxics as: PCBs, arsenic, lead, mercury, cyanide, and asbestos (NTR, 1992).

Only after each of these states (Figure 4) have adopted their own human health criteria and toxics control, and received approval from EPA for their water quality standards, does EPA then officially “withdraw” the Federal human health and toxics criteria they promulgated in 1992. To this date, notice of official Federal withdrawal has occurred for Rhode Island, Vermont, the District of Columbia, Kansas, Idaho, Alaska, Arkansas, Puerto Rico, California, and New Jersey (EPA, n.d.k.). As such, the only remaining states that have not yet created their own human health criteria and associated toxics control and received EPA approval for state-specific human health criteria are the four states of Florida, Michigan, Nevada, and Washington. This rule provides a basis for the current Washington rulemaking as it is from these minimum toxics standards that Washington is currently revising their water quality standards.

As discussed above, the Clean Water Act has a long history of both amendments, guidance documents, and associated regulations that helped shape it from a general policy on protecting water quality to the intricate infrastructure that guides both state and

1992 National Toxics Rule: Establishment of Numeric Criteria for Priority Toxic Pollutants

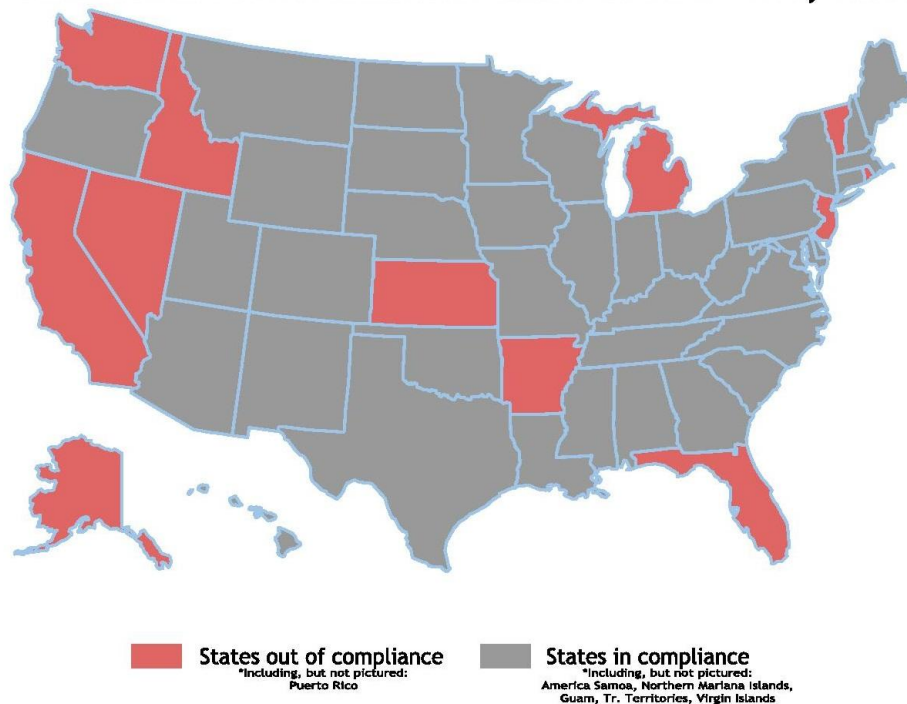


Figure 4. States forced to adopt 1992 national toxics rule.

tribal water quality standards and implementation. Below, I focus on the EPA's Clean Water Act requirements for states and authorized tribes in adopting water quality standards for surface waters, as well as the associated review and policy surrounding its adoption.

EPA Water Quality Standards

Water quality standards, as “the foundation of the water quality-based control program mandated by the Clean Water Act” (EPA, n.d.k., para. 1), provide much of the basis for the state and “authorized” tribal requirements under the Clean Water Act. The

term “states” includes the 50 states, as well as Washington DC and the territories of America Samoa, Virgin Islands, Puerto Rico, Guam, and the Commonwealth of the Northern Mariana Islands. The term “authorized tribes” refers to tribes that have applied to and received approval from EPA to enact tribal water quality standards for the waters of their reservations. In order to receive approval from EPA, tribes must be Federally recognized, have a body that governs and resides over the reservation, have regulatory authority over the water quality of the reservation, and have the technical capability to manage a water quality standards program (EPA, n.d.a). According to the EPA website (EPA, n.d.h.), there are 41 tribes that have approved water quality standards. The Clean Water Act requires both states and any authorized tribes to determine and/or adopt four general components, including setting an antidegradation policy, water quality criteria, designated uses, and general policies to implement the water quality standards (EPA, n.d.k.). I will delve into these sections below, paying particular attention to the water quality criteria, as these criteria have been the focus of the current debate.

Antidegradation Policy

The antidegradation policy within water quality standards focuses on restoring, maintaining, and protecting uses of water. Part of the requirements of an antidegradation policy includes classifying all water bodies into three different tiers of protection or antidegradation. Tier 1 serves as the “absolute floor” of classifying and protecting all surface water bodies and provides minimum level of protection for “existing uses” (EPA, n.d.l., Chapter 4). Defining an existing use can be accomplished by showing that either fishing, shellfishing, swimming, etc. has occurred in the water body since November 28th, 1975 or that the water quality of the water body, barring any physical constraints, could

attain or be suitable for fishing, shellfishing, swimming, etc. (EPA, n.d.l.). Tier 2 consists of “high quality” water bodies whose conditions are greater than the minimum “fishable/swimmable” use promoted by the Clean Water Act, and Tier 3 consists of water bodies that are classified as outstanding national resource waters. Tier 2 water bodies differ from Tier 3 water bodies in that water quality cannot, except for temporary changes, be lowered within latter. A Tier 2 water body's water quality can be lowered, provided that certain procedures take place and that the water quality is not lowered to the point of negatively affecting an existing or designated use (EPA, n.d.k.).

Designated Uses

While there are a variety of designated uses that a state or tribe may set for their water bodies, the fishable/swimmable goal serves as a default use. Designated uses are an essential part of the water quality standards as it is through designating uses of a water body that not only the current (i.e. “existing”) use of the water body is recognized, but the goal for the water body is delineated. A designated use varies from an existing use in that “designated uses focus on the attainable condition while existing uses focus on the past or present condition” (Christensen, n.d., p.27). Designated uses can include public water supplies; recreation; agriculture and industry; fish, shellfish, and wildlife use; navigation; etc. If a water body does not or cannot allow for the default Clean Water Act uses of fishing and swimming, then a Use Attainability Analysis (UAA) has to be conducted wherein a scientific study assesses the water body to determine the factors constraining fishing or swimming (EPA, n.d.k.).

The EPA also provides guidance that states and authorized tribes should “consider downstream uses” (EPA, n.d.l., Chapter 2) when designating uses for water to guarantee

that pollution upstream will not negatively impact water and standards downstream. EPA points to the need for public participation and encourages the state to allow other states or authorized tribes to comment on water quality standards that might affect their neighboring downstream water quality.

Water Quality Criteria

States and authorized tribes are required to adopt water quality criteria to protect the above discussed designated uses and can either decide to fully adopt the criteria that EPA publishes as their national recommended water quality criteria under the Clean Water Act, modify the Clean Water Act criteria based upon site-specific conditions, or to adopt other state-specific and scientifically-supported methods. The water quality criteria currently include numeric and narrative criteria for 126 toxic pollutants, biological criteria to protect the aquatic community, nutrient criteria to protect against over-enrichment and eutrophication, and sediment criteria to protect against contaminated sediments (EPA, n.d.k.). For the purposes of this thesis, I will only concentrate here on discussing the mechanics behind how the numeric criteria for toxic pollutants are decided and set as it is within this section that the human health criteria and fish consumption rates are situated.

The criteria for human health protection, or human health criteria, are an integral part of the Clean Water Act in protecting human health from end-of-pipe toxic pollutants. As previously discussed, the National Toxics Rule is incredibly important in discussing Washington's current rule-making process as it is from this rule that Washington's current human health criteria originates. Since the 1992 National Toxics Rule, the EPA has actually completely revised their methodologies (EPA, 2000), as well as their

recommended criteria multiple times (EPA, n.d.f.), the most recent of which includes a draft 2014 update that includes an updated body weight, fish consumption rate, and drinking water intake, among others factors (EPA, 2014b). However, these methodological or factor updates will not replace or change the National Toxics Rule's criteria (WDOE, 2011d). Updates to human health factors are designed to provide the most recent recommendations of EPA as “EPA is required to develop and publish water quality criteria that reflect the latest scientific knowledge [but] These criteria are not rules, nor do they automatically become part of a state’s water quality standards” (EPA, 2014b, p.1). As such, while EPA develops and issues additional guidance regarding methodologies, factors, and water quality criteria, these guidance documents do not necessarily need to be adopted by states and authorized tribes. With this in mind, I will first discuss the human health methodologies and factors that are discussed within EPA's National *Water Quality Standards Handbook* and National Toxics Rule as it is from these methodologies and factors Washington's current health criteria is based. I will then discuss the updated methodologies and factors that EPA is using to develop their most recent recommended human health criteria.

National toxics rule human health criteria. While the EPA’s *Water Quality Standards Handbook* (EPA, n.d.l.) is referred to as a “living document” that was updated in 2014, its chapters have various time stamps, with its third Water Quality Criteria chapter last updated in 1994. As such, the formulas or equations, factors, and criteria within this third chapter mainly reflect the information codified within the 1992 National Toxics Rule. As the *Water Quality Standards Handbook* is an official guidance document that provides narrative explanation and detail of water quality standards, I refer mainly to

the guidance contained within it, making note of any factors that are not included within the National Toxics Rule. Below, I discuss the formula or equations the EPA's utilized for setting the human health criteria within the National Toxics Rule, includes incorporating issues of magnitude and duration, human exposure, fish consumption values, bioaccumulation, risk considerations, and other factors.

Magnitude and duration. Issues of magnitude and duration are included within the human health criteria in order to protect against and take into consideration long-term effects. These long-term effects are considered by incorporating a life-time exposure within the equation, which the EPA set within the National Toxics Rule and continues to set at 70 years for carcinogens and varying years for noncarcinogens. EPA states that as noncarcinogens are more complicated in regards to duration and other issues, the duration is dependent on the specific noncarcinogenic chemical.

Human exposure. For human exposure considerations, the EPA's stated default within the *Water Quality Standards Handbook* (EPA, n.d.l.) is to include toxic pollutant exposure that only occurs due to risks directly related to surface water, specifically drinking water and eating of contaminated fish and shellfish, but provides the caveat that a “complete human exposure evaluation for toxic pollutants of concern for bioaccumulation would encompass not only estimates of exposures due to fish consumption but also exposure from background concentrations and other routes, the more important of these include recreational and occupational contact, dietary intake from other than fish, intake from air inhalation, and drinking water consumption” (Chapter 3, p.4). The EPA couches this section by stating that there are many case-specific consumption factors that can affect this factor, including but not limited to the

types of fish and fish tissue consumed, lipid content, food preparation practices, and average exposure of fish to the effluent or pollution at the end of the pipe. Also within this the section, the EPA states that while the default is to only include exposure due to drinking water and eating fish and shellfish, the human health guidelines do allow inclusion of other sources when the data is available. Inhalation and non-fish dietary exposure, while not discussed in the *Water Quality Standards Handbook* beyond stating that when they are unknown, they may be deleted, are included within the noncarcinogen human health criteria equation. An additional factor is the drinking water intake, for which the EPA set within the National Toxics Rule at 2 liters per day, which the guidance states that this can be removed from the equation if the body of water does not serve as a drinking water source.

Fish consumption values. For the fish consumption values, the EPA (n.d.l.) states that “consumption of contaminated fish tissue is of serious concern because the presence of even extremely low ambient concentrations of bioaccumulative pollutants (sublethal to aquatic life) in surface waters can results in residue concentrations in fish tissue that can pose a human health risk” (Chapter 3, p.5). The *Water Quality Standards Handbook* states that the EPA currently has four different fish and shellfish consumption amounts in their guidance, which are based upon data collected between 1973-74 and include information from both fish and non-fish eating consumers:

1. 6.5 grams/day (national consumption average of estuarine and freshwater fish/shellfish);
2. 20 grams/day (national consumption average of marine, estuarine, and freshwater fish/shellfish);
3. 165 grams/day (national 99th percentile who were consuming the most fish/shellfish); and
4. 180 grams/day to “represent a 'reasonable worst case' based on the assumption that some individuals would consume fish and shellfish at a rate equal to the

combined consumption of red meat, poultry, fish, and shellfish in the United States” (EPA, n.d.l., Chapter 3).

Within this study, the mean lipid (i.e. fat) content for the fish and shellfish consumed was 3%, which is the default lipid percentage EPA includes within the human health criteria equation. It is the 6.5 grams/day rate, from the above 1973-74 study, that set as the default within the National Toxics Rule (NTR, 1992). Again, while the four levels above are still listed within the *Water Quality Standards Handbook* as the defaults, the EPA has updated their recommended water quality criteria multiple times and is currently revising their human health criteria, which includes updated fish consumption rates. I will discuss these rates and current draft changes more in depth below, within the next section. While the EPA’s *Water Quality Standards Handbook* does not directly discuss the need for body weight in the equation for human health, body weight (the National Toxics Rule default is 70 kg or ~154 lbs) is discussed in conjunction with the fish consumption rate and thus assumed a necessary factor to determine the effects of fish consumption, drinking water, and toxic accumulation on the human body.

Bioaccumulation. Considerations of bioaccumulation are included within the human health criteria in order to determine the concentration of the toxic within the fish tissue as opposed to the concentration of the toxic within the water. The bioaccumulation for each toxic is discussed through either its bioconcentration factor (BCF) or bioaccumulation factor (BAF), with the former only considering toxic uptake from water and the latter considering toxic uptake from both water and food. It is worthy of noting that, while this is included within the *Water Quality Standards Handbook*, the National Toxics Rule only references BCFs without any reference to food multipliers or BAFs. Within the *Water Quality Standards Handbook*, BAFs are instructed to be used whenever

available. However, it is stated that few BAFs have been accurately measured and there is also uncertainty in regards to applying the measurements broadly. The EPA instructs that when a “measured” BAF is not available, one can be estimated by using the BCF in conjunction with the food multipliers (FM), which helps calculate the trophic level or where the organism is within the food chain. The default trophic level the EPA (n.d.l., Chapter 3) states should be used within the equation is trophic level 4 as these higher level organisms (e.g. sport fish) “are typically the most desirable species for sport fishing” (p.6). In discussing when other trophic levels “might” be used, the EPA states that it could occur in “rare” cases where the only organisms found are of a lower trophic level, providing oyster beds as an example.

Risk considerations. Lastly, the within the *Water Quality Standards Handbook*, the EPA recommends that states and tribes incorporate risk into the human health criteria by using the Integrated Risk Information System (IRIS) database that provides data on the effects of chemicals on human health. This database separates risk into two types of values with an oral Reference Dose (RfD) used for noncarcinogenic effects and the oral carcinogenic potency estimate (q_1^*) used for carcinogenic effects. Simply put, reference doses are estimated from both human and animal exposure studies and are estimates of the amount of a certain toxic a human can withstand, without “deleterious effects,” over a lifetime. Officially, they are derived from NOAEL (“no-observed-adverse-effect” level) or from LOAEL (“lowest-observed-adverse-effect” level). The oral carcinogenic potency estimate (or cancer risk rate), on the other hand, appears to be mainly estimated from animal exposure studies and utilizes data from high dose exposures to cancer-causing toxics and then translates this data to low doses and uses a linearized model to account

for a lifetime exposure. In cases where the data is derived from human studies, then no data extrapolation occurs and cancer is estimated based on the observed increased risk of cancer. While a zero criterion would provide the maximum protection against cancer, EPA (n.d.l) states that “because a publicly acceptable policy for safety does not require the absence of all risk, a numerical estimate of pollutant concentration (in ug/l) which corresponds to a given level of risk for a population of a specified size is selected instead” (Chapter 3, p.9), wherein a 10^{-6} cancer risk rate translates into one extra case of cancer for every one million people. The limitations that EPA states (n.d.l.) are inherent to the cancer risk rate and could over or underestimate risk include the quality of the cancer data base in regards to whether the data is based off of human or animal data, limited information about what causes cancer, and that the “EPA considers risk to be additive” (Chapter 3, p.9), wherein the overall risk of cancer could be higher if multiple carcinogen toxics are present in water or an organism. While the EPA (n.d.l.) states that their water quality criteria documents include example cancer risk rates of 10^{-5} (one case of cancer in a 100,000 people) to 10^{-7} (one case of cancer in a 10,000,000 people), they include that “[s]tates may make their own judgments on each of these factors within reasonable scientific bounds, but documentation to support their judgments must be clear and in the public record” (Chapter 3, p.3).

Within the National Toxics Rule (1992), the default cancer risk level is set at 10^{-6} or one additional case of cancer for every million people, with EPA stating within their section on addressing comments, that “establishing a single risk level for all States departs from Agency policy in the standards program” and that EPA would provide “a final opportunity for the Governor of each State. . . to inform EPA if they believe a

different risk level should be selected for their state” (Section F5, para. 5). The final cancer risk rates adopted by the 14 states varied with seven states adopting 10^{-6} , six states adopting 10^{-5} ¹, and one state adopting 10^{-6} for A and B class carcinogens and 10^{-5} for C class carcinogens. Washington adopted a 10^{-6} cancer risk rate, providing comments to EPA that “[t]he State of Washington supports adoption of a risk level of one in a million for carcinogens. If EPA decides to promulgate a risk level below one in a million, the rule should specifically address the issue of multiple contaminants so as to better control overall site risks” (NTA, 1992, Part G.1, para. 28).

Equations 1 and 2 are the human health criteria equations and associated definitions utilized for both calculating criteria for both the carcinogen and noncarcinogen toxics, as listed in the *Water Quality Standards Handbook* and, with the exception of the reference to BAFs and food multipliers, within the National Toxics Rule. Equation 1, run for each cancer causing toxic, states that the water quality criteria C will equal the risk level (stated as generally ranging from 10^{-4} to 10^{-6}) RL times the average weight of an adult (70 kg) WT, as divided by the “carcinogenic potency factor” $q1^*$ times the combined number of an adult's average water intake (2 liters/day) WI plus the fish consumption rate FC times the percentage of consumed fish/shellfish tissue fat L, times the product of the multiplier for where the fish/shellfish is within the food chain FM and the bioconcentration factor for the specific toxic BCF.

¹ While I've listed that six states adopted a 10^{-5} cancer risk rate, this number includes Arkansas. Arkansas was technically subject to the NTA, but the final rule states that Arkansas' own human health criteria were approved by EPA in January of 1992 and the final NTA does not include the cancer risk rate chosen by Arkansas. While their adopted cancer risk rate was not listed within NTA, Arkansas' water quality standards list a cancer risk rate of 10^{-5} (Arkansas Pollution Control and Ecology Commission, 2007).

$$C \text{ (mg/l)} = \frac{(RL \times WT)}{q1 * [WI + FC \times L \times (FM \times BCF)]} \quad (1)$$

Equation 2, run for each non-cancer causing toxic, states that the water quality criteria C will equal the oral reference dose Rfd times the average weight of an adult (70kg) WT minus the sum of non-fish dietary exposure DT and non-fish inhalation exposure IN, times the average weight of an adult (70kg), divided by an adult's average water intake (2 liters/day) times the product of the fish consumption rate FC, the percentage of consumed fish/shellfish tissue fat L, the multiplier for where the fish/shellfish is within the food chain FM, and the bioconcentration factor for the specific toxic BCF.

$$C \text{ (mg/l)} = \frac{(RfD \times WT) - (DT + IN) \times WT}{WI + [FC \times L \times FM \times BCF]} \quad (2)$$

(EPA, n.d.l., Chapter 3, p.8-10).

Updated human health methodologies and criteria. While the previous human health criteria methodologies and recommended criteria defaults are still officially referenced within the *Water Quality Standards Handbook* and codified within the National Toxics Rule from which Washington State is operating, the EPA updated their methodologies in 2000 (EPA, 2000) and their recommended water quality criteria numerous times, with the most recent update still draft with commenting period ending August, 2014 (EPA, n.d.d.). These changes are of particular interest to the Washington State water quality standards update as Washington is in the process of removing the outdated National Toxics Rule criteria and will using the EPA's updated 2000 methodology and Washington-chosen human health criteria. Below, I will provide a brief

description of the changes between the methodology used in the National Toxics Rule and the updated 2000 methodology and will then discuss the most recent EPA recommended water quality criteria.

EPA's updated 2000 methodology. Changes between the current 2000 methodology and the previous 1980 methodology as utilized in the National Toxics Rule and often referenced within the *Water Quality Standards Handbook* are extensive, the vast majority of which are beyond the scope of this thesis to discuss. However, I will briefly discuss what I view as the applicable updated information for carcinogen risk, noncarcinogen risk, bioaccumulation, and exposure factors that have culminated in new factors and equations for calculating carcinogens and noncarcinogen human health criteria, as well as EPA's recommendations for states in setting cancer risk rates.

For carcinogens, a significant change includes an additional equation to differentiate between nonlinear and linear dose extrapolation to encompass post-1980 methodologies to quantify cancer risks (EPA, 2000). In short, the mathematical term of “linear” is used in this context to indicate when the effects of a toxic are proportional to the dose wherein one can “draw a straight line between a point of departure from observed data, as a default, the LED_{10} , and the origin. . .” (EPA, 1999, p.1-16). Within the linear cancer equation, the standard cancer risk rate, as described within the *Water Quality Standards Handbook*, is used (e.g. one in a million). This linear equation is designed as the default approach, unless enough data is available to indicate that the toxic's effects are “nonlinear” in that the toxic's effects do not model to a straight line. It is worthy of noting that the standard cancer risk rate is not used within this equation, but a Point of Departure (POD) and an Uncertainty Factor (UF) for carcinogens are included

instead, as well as a Relative Source Contribution (RSC). Within their Draft 1999 Guidelines for Carcinogen Risk, the EPA states,

[i]n these cases, short-term exposure estimates (several days to several months [sic] may be more appropriate than the lifetime average daily dose. In these cases both agent concentration and duration are likely to be important, because such effects are generally observed to be reversible at cessation of very short-term exposure. (p.1-19)

In short, for the toxics can be proved to be nonlinear, the EPA has determined that shorter term effect estimates, which include other exposure from other sources of the toxic, should be used rather than standardized long term cancer risk rate that is extrapolated for exposure over a 70-year life span.

For noncarcinogens, there are changes in how the RfD or Reference Concentration (RfC) is calculated. While the previous methodology focused on NOAEL or LOAELs to estimate the RfC, the 2000 methodology states that post-1980 studies began supporting using a benchmark dose (BMD) instead. BMD is the dose that is needed to see a certain level of response, as compared to a control. However, that stated, the updated equations still include reference to utilizing a NOAEL, LOAEL, or LED₁₀, the latter of which is the standard POD or point of departure in extrapolating the data.

For bioaccumulation factors, the EPA recommends using BAFs (incorporating toxic uptake from water and food) rather than BCFs (just toxic uptake from water) for fish and shellfish. This recommendation, while not included in the 1980 methodology or the National Toxics Rule, was included in *Water Quality Standards Handbook* and discussed in the previous section.

For exposure factors, there is a shift to an inclusion of a Relative Source Contribution (RSC) to calculate total exposure to a specific toxic (beyond just water

exposure) that has taken the place of dietary and inhalation exposure. This RSC is utilized to proportion risk, estimating that between 80 and 20 % of the risk comes from other non-drinking water and fish consumption sources, with 80% considered the “ceiling” and 20 % the “floor” (EPA, 2000, p.1-7). The RSC is included within both the noncarcinogen equation as well as the nonlinear carcinogen equation. The 2000 methodology states that “EPA's policy is to routinely account for all sources and routes of non-occupational exposure when setting AWQC for noncarcinogens and for carcinogens based on nonlinear low-dose extrapolations. EPA believes that maintaining total exposure below the RfD (or POD/UF) is a reasonable health goal and that there are circumstances where health-based criteria for a chemical should not exceed the RfD (or POD/UF), either alone. . . or in combination” (p.4-5). This RSC differs from the previous inclusion of dietary and inhalation exposure in that the former methodology instructed that these factors be deleted whenever data was not available, while the 2000 methodology recommends using at least a minimum percentage to account for other sources of contamination.

Overall, the above changes reflect 20 years of EPA scientific advances in calculating the effects of toxic chemicals, including broadening the exposure to include the effects of toxics. Equations 3, 4, and 5 are the three updated human health equations for both carcinogens and noncarcinogens, incorporating these changes in complexity. Equation 3, run for each nonlinear (low-dose extrapolation) cancer-causing toxic, states that the water quality criterion AWQC will equal the difference of the carcinogen point of departure POD and the carcinogen uncertainty factor UF, times the non-water exposure relative source contribution RSC, times the difference of the average adult body weight

BW (70kg) and the combined average adult's water intake DI (2 liters/day) plus 14 times the product of the tropic level (between 2 and 4) of the fish/shellfish eaten FI_i and the tropic level's (between 2 and 4) bioaccumulation factor BAF_i .

$$AWQC = \frac{POD}{UF} * RSC * \left(\frac{BW}{DI + \sum_{i=2}^4 (FI_i * BAF_i)} \right) \quad (3)$$

Equation 4, run for each linear (low-dose extrapolation) cancer-causing toxic, states that the water quality criterion AWQC will equal the carcinogenic low-dose extrapolation risk-specific dose RSD times the difference of the average adult body weight BW (70kg) and the combined average adult's water intake DI (2 liters/day) plus 14 times the product of the tropic level (between 2 and 4) of the fish/shellfish eaten FI_i and the tropic level's (between 2 and 4) bioaccumulation factor BAF_i .

$$AWQC = RSD * \left(\frac{BW}{DI + \sum_{i=2}^4 (FI_i * BAF_i)} \right) \quad (4)$$

Equation 5, run for non cancer-causing toxic, states that the water quality criterion AWQC will equal the non cancer effects reference dose Rfd times the non-water exposure relative source contribution RSC times the difference of the average adult body weight BW (70kg) and the combined average adult's water intake DI (2 liters/day) plus 14 times the product of the tropic level (between 2 and 4) of the fish/shellfish eaten FI_i and the tropic level's (between 2 and 4) bioaccumulation factor BAF_i .

$$AWQC = RfD * RSC * \left(\frac{BW}{DI + \sum_{i=2}^4 (FI_i * BAF_i)} \right) \quad (5)$$

(EPA, 2000, p.1-9 – 1-10).

In addition to the above methodological changes, the 2000 methodology also discusses EPA's decision to utilize a 10^{-6} cancer risk rate for the general population, stating,

EPA believes that both 10^{-6} and 10^{-5} may be acceptable for the general population and that highly exposed populations should not exceed a 10^{-4} risk level. States or Tribes that have adopted standards based on criteria at the 10^{-5} risk level can continue to do so, if the highly exposed groups would at least be protected at the 10^{-4} risk level. However, EPA is not automatically assuming that 10^{-5} will protect “the highest consumers” at the 10^{-4} risk level. Nor is EPA advocating that States and Tribes automatically set criteria based on assumptions for highly exposed population groups at the 10^{-4} risk level. The Agency is simply endeavoring to add that a specific determination should be made to ensure that highly exposed groups do not exceed a 10^{-4} risk level. (p.2-6, emphasis added)

EPA goes on to include that flexibility will continue to be given to states and authorized tribes to choose either a 10^{-5} cancer risk rate or 10^{-6} cancer risk rate, so long as the state or tribe has ensured public participation, has identified the most at-risk subpopulations, and has determined that the chosen cancer risk rate protects those most at-risk subpopulations.

EPA's recommended water quality criteria. The most recent draft update is not proposing changes to the above methodology or equations, but is recommending new human health criteria for 94 toxic chemicals, using updated information for drinking water, body weight, fish consumption, bioaccumulation, health risk, and relative source contributions. Once approved, the new EPA human health factor recommended defaults

will be set at 80 kg (~176 lbs) for body weight, 3 liters a day for drinking water, and 22 grams a day for fish consumption. Additional updates will include recommending using three trophic levels for bioaccumulation in fish, updated toxicity information for calculating risk, and a default relative source contribution of 20 percent within the noncarcinogen formula (EPA, 2014b).

In Table 1, I detail the changes that have occurred for the five factors of body weight, fish consumption, cancer risk, drinking water, and relative source contribution as used within the 1980 methodology, the 1992 National Toxics Rule, the 2000 methodology, and the newest draft 2014 criteria.

Table 1

EPA Recommended Water Quality Factor Defaults

<i>Year/ Guidance</i>	<i>Body Weight</i>	<i>Fish Consumption Rate</i>	<i>Cancer Risk Rate</i>	<i>Drinking Water</i>	<i>Relative Source Contribution</i>
1980 Methodology	70 kg (~154 lbs)	6.5 grams / day (~.23 ounces)	10⁻⁵ (one in one hundred thousand)	2 liters /day (~68 ounces)	NA. Inhalation and dietary exposure could be included when data available
1992 National Toxics Rule	70 kg (~154 lbs)	6.5 grams / day (~.23 ounces)	10⁻⁶ (one in a million)	2 liters /day (~68 ounces)	NA. Inhalation and dietary exposure could be included when data available
2000 Methodology	70 kg (~154 lbs)	17.5 grams / day (~.62 ounces)	10⁻⁶ (one in a million)	2 liters / day (~68 ounces)	20%
Draft 2014 Updated Criteria	80 kg (~176 lbs)	22 grams / day (~.78 ounces)	10⁻⁶ (one in a million)	3 liters / day (~101 ounces)	20%

As Table 1 shows, the 1992 National Toxics Rule diverged from the 1980 methodology in recommending a default cancer risk rate of 10^{-6} over the 1980 rate of 10^{-5} . Since that time, the EPA has recommended the same at 10^{-6} risk rate, but the other factors have been updated to account for additional average body weight, increased consumption of fish and drinking water, and an increased default accounting for the effects of toxics from sources other than fish, shellfish, and drinking water.

General Policies

In implementing the above water quality standards, states and authorized tribes may choose, but are not required, to include different policies such as variances, low-flows, and mixing zones (EPA, n.d.l., Chapter 5). I will detail these policies below, paying particular attention to variances as this type of “implementation tool” has been a significant focus of the water quality standards update in discussing how the industry and municipal National Pollutant Discharge Elimination System (NPDES) permittees will meet new water quality standards.

Mixing zones. In implementing water quality criteria, states and authorized tribes may choose to allow a mixing zone, which is an “area surrounding or downstream of a point source discharge where the effluent plume is progressively diluted by the receiving water and numeric criteria otherwise applicable to the segment may be exceeded” (EPA, n.d.k., General Policies, para.2). More simply stated, a mixing zone is a circle that surrounds a wastewater-discharging pipe wherein toxic pollutant levels are allowed to exceed water quality standards within that circle, as long as the waterbody mixes with and dilutes the toxics enough to meet water quality standards at the outer boundary of the mixing zone circle. States and authorized tribes may include a mixing zone policy within

their water quality standards so long as the policy ensures that mixing zones do not impair the waterbody as a whole, the toxic effluent is not lethal to any organisms swimming through the mixing zone, the toxic effluent in the mixing zone will not create significant risks to human health, and the mixing zones do not threaten critical areas such as spawning grounds, endangered species habitat, shellfish beds, and drinking water sources. However, the EPA (n.d.l., Chapter 5) states that, “if not applied appropriately a mixing zone could adversely affect mobile species passing through the mixing zone as well as less mobile species (e.g., benthic communities) in the immediate vicinity of the discharge. Because of these and other factors, mixing zones should be applied carefully so that they do not result in impairment of the designated use of the waterbody as a whole or impede progress toward the Clean Water Act goals” (p.2). While the EPA reviews and approves the broader mixing zone policy in concert with the water quality standards, states and authorized tribes determine the site-specific mixing zones for each permittee under the NPDES.

Low-flows. While the above mixing zone policy is listed as an optional policy that states and authorized tribes can choose to include, the EPA *Water Quality Standards Handbook* (n.d.l.) states that to protect designated uses of a water body, critical low-flow values are “generally” established. Low-flows within surface water can be a significant issue as “[d]ilution is one of the primary mechanisms by which the concentrations of contaminants in effluent discharges are reduced following their introduction into a receiving water” (Chapter 5, p.7). In other words, a decreased amount of water due to low-flows equates to less water being available for toxic chemical dilution. There are

various models and criteria that the EPA recommends states and authorized tribes adopt in calculating and setting low-flow values.

Variances. A third implementation policy that states and authorized tribes can choose to include within their water quality standards are variances. Variances “temporarily relax a water quality standard” (n.d.k., General Policies, para. 3) and provide additional time for NPDES permittees to meet the water quality standards. The EPA (n.d.l., Chapter 5) states that “[v]ariances can be appropriate to address situations where it is known that the designated use and criterion are unattainable today (or for a limited period of time), but feasible progress could be made toward attaining the designated use and criterion” (p.9). Variances are water quality parameter² or toxic-specific and can either apply to a specific NPDES permittee or to a water body as a whole. EPA stipulates that variances differ from a “permit compliance schedule” wherein the former are specific to situations where a designated use or standards are not attainable and the latter for situations where standards are attainable, but the permittee requires more for facility upgrades.

Variances are a similar concept to the above described mixing zones in that both allow a larger concentration of toxics to be emitted by NPDES permitters, either within a limited area to allow for dilution or for a limited amount of time to allow for permittee progress to be made. Additionally, they are similar in that states and authorized tribes may choose to adopt an overarching policy into their water quality standards for each of these implementation tools. However, variances and mixing zones differ in regards to how they are approved and implemented for individual NPDES permittees. States and

² Examples of water quality parameters include the non-toxic chemical parameters of pH, temperature, and dissolved oxygen (Michaud, 1991).

authorized tribes are not forced to adopt an overarching variance policy in order to provide an individual NPDES permittee variance. That stated, while individual NPDES permittee mixing zones do not need to be incorporated into the official water quality standards and approved by EPA, individual variances must all be reviewed and approved by EPA. At the end of the timeframe specified by the variance, the NPDES permittee must either demonstrate that they can meet the water quality standard or must apply for and receive approval from EPA for a new variance (EPA, n.d.l., Chapter 5).

Water Quality Standards Review, Revision, and Approval

A particularly pertinent topic to this thesis is the process through which water quality standards are reviewed, revised, and approved by EPA. Below, I will discuss the state and authorized process for review and revision of water quality standards, the EPA review and approval process, and the circumstances that are needed for EPA to promulgate water quality standards for states or authorized tribes.

Review and revision. The Clean Water Act requires that all states and authorized tribes, at a minimum, review their water quality standards triennially or once every three years. This triennial review should include a full evaluation of the above water quality standards components of antidegradation policy, designated uses for waterbodies, water quality criteria, implementation policies, and other issues such as updated criteria, monitoring data, legal decisions, regulations and guidance, and/or input from the public. The EPA (n.d.l., Chapter 6) recommends that the public have a significant role in this review process, including at least two public comment/suggestion solicitation periods, the first after initial consultation with EPA and the second after the draft water quality standards have been developed (Figure 5) (EPA, n.d.l., Chapter 6). Additionally, states

and tribes are required to collate all public comments and show how all comments were addressed (EPA, n.d.k.) through responsiveness summaries wherein the state or tribe summarizes the public's comments, suggestions, criticisms, and views and discusses any changes that have been made in response to a public comment/suggestion, or conversely

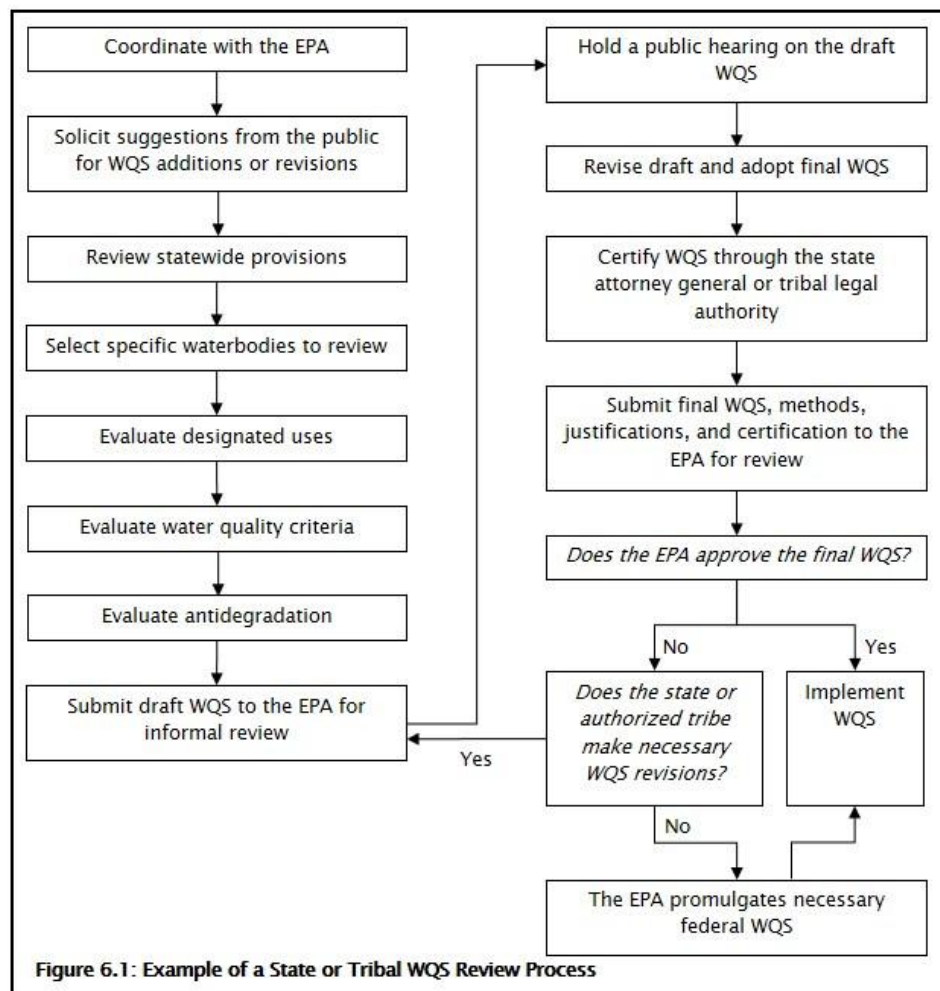


Figure 5. EPA example of the major components of the review process for state or tribal water quality standards. Reprinted from “Water Quality Standards Handbook – Chapter 6: Procedures for Review and Revision of Water Quality Standards (40 CFR 131 – Subpart C),” *The United States Environmental Protection Agency*. Retrieved December, 2014, from <http://water.epa.gov/scitech/swguidance/standards/handbook/upload/handbook-chapter6.pdf>.

an explanation for why a public suggestion has not been incorporated (Public participation, 1979).

In addition to public involvement, the EPA recommends that the state or authorized tribe have early and sustained coordination with EPA, with the option of providing EPA draft water quality standards for a pre-review. In submitting their final reviewed water quality standards to EPA, the state or authorized tribes must include six components: 1. Designated uses that conform to Clean Water Act requirements; 2. Methods and analysis that were used by the state or tribe to review/develop the standards; 3. Water quality criteria that are protective of designated uses; 4. An antidegradation policy that conforms to Clean Water Act requirements; 5. A state attorney general or tribal authority certification that the water quality standards were legally adopted; and 6. Scientific justification for the chosen water quality standards and any implementation policies. States and authorized tribes have 30 days to submit their water quality standards to the EPA, after their “final administrative action” or when the water quality standards are adopted into state or tribal law (EPA, n.d.l., Chapter 6).

EPA review and approval. State and authorized tribes must submit their water quality standards to their regional EPA office, which for Washington State is Region 10³, to be reviewed by the Regional Administrator (Water quality standards, 1983). The review process is relatively quick and an approval or disapproval must occur within 60 or 90 days, respectively. The EPA Regional Administrator reviews all parts of the water quality standards to ensure that they are scientifically defensible and that they meet the minimum Clean Water Act requirements. EPA (n.d.l., Chapter 6) also “consider[s] the

3 EPA Region 10 serves the Pacific Northwest and includes the states of Washington, Oregon, Idaho, and Alaska; and 271 tribes (EPA, n.d.e.)

adequacy of the analyses and the public comments received during the public hearing process” (p.6). Review of water quality standards can also result in partial approvals where only portions of the standards are approved (EPA, n.d.l., Chapter 6) or conditional approvals where only minor issues need to be fixed and the state or authorized tribe needs to complete the revisions within 90 days (Prothro, 1989). Also, in reviewing water quality standards, EPA must consult with the United States Fish and Wildlife Service to make sure that the standards do not adversely affect endangered species (EPA, n.d.k.). When water quality standards are disapproved, the EPA must provide review comments that include the revisions that are needed to meet the Clean Water Act requirements and EPA approval. If disapproved, the state or authorized tribe follows their previous water quality standards until their new standards are approved or EPA promulgates (EPA, n.d.l., Chapter 6).

EPA promulgation. EPA promulgation of water quality standards is when the EPA sets water quality standards on behalf of the state or authorized tribe. While EPA (n.d.l., Chapter 6) states that the agency “prefers that states and authorized tribes adopt their own WQS” (p.8), they list two scenarios where they are required to promulgate. EPA must promulgate if the state or authorized tribe either 1. submits water quality standards that are disapproved by EPA and then does not make the EPA-recommended revisions within 90 days; or 2. EPA makes an “administrator's determination” that the state or authorized tribe's water quality standards are not meeting the Clean Water Act. In both cases, the EPA must “promptly” propose water quality standards (EPA, n.d.l., Chapter 6) and then follow the same rules as the state or authorized tribe, such as discussing their analyses for their chosen water quality standards and including public

comment (EPA promulgation of water quality standards, 2011). The EPA has 90 days to promulgate after proposing water quality standards. However, if the state or authorized tribe provides amended water quality standards that are approved by EPA before EPA can promulgate, then the promulgation does not occur and the state or authorized tribal water quality standards prevail.

EPA promulgations are relatively rare, with the last promulgation occurring ten years ago. Within the National Toxics Rule (1992), EPA states “[f]ederal promulgation of State water quality standards should be a course of last resort. It is symptomatic of something awry with the basic statutory scheme” (Section E1, para. 13). To date, EPA has only promulgated water quality standards for: Colville Confederated Tribes (Colville) in 1989, 14 states under the 1992 National Toxics Rule for minimum toxics control, 8 Great Lakes states in 1995, and 21 coastal and Great Lakes states in 2004 for minimum bacterial standards (EPA, n.d.j.) As demonstrated from this list, it is far more common for the EPA to promulgate for multiple states at a time to bring states to a minimum standard for a specific issue. They have seemingly never promulgated for a single state and have only once promulgated for a tribe. In the case of Colville, the circumstances for EPA promulgation were unique in that Colville requested that EPA promulgate water quality standards for them. According to the final Water Quality Standards for the Colville Indian Reservation in the State of Washington rule (1989), Colville adopted their own water quality standards in 1986 and requested EPA promulgation as they were concerned that their water quality standards were not official under the Clean Water Act. This request triggered revisions to the Clean Water Act in 1987 to include a directive for EPA to specify how tribes could be “treated as states” (or “authorized”) to manage their own

water quality standards. Within this rule, EPA emphasized that this promulgation did not set a precedent and was unique in that Colville requested EPA promulgate using Colville's own tribal water quality standards and that their request was made before the 1987 Clean Water Act revisions.

Washington State's Water Quality Standards

As discussed above, the EPA is the overarching Federal authority of the Clean Water Act with the responsibility of reviewing, approving, disapproving, and even in some cases promulgating water quality standards, but each state and authorized tribe holds the responsibility to meet the requirements of that act. Ecology is currently designed by Washington State (Revised Code of Washington 90.48.260) as the “state water pollution control agency for all purposes of the federal clean water act” (para. 1). The stated purpose of Washington’s current surface water quality standards mimics the Clean Water Act’s seminal fishable/swimmable goal in stating the need to establish standards “consistent with public health and public enjoyment of the waters and the propagation and protection of fish, shellfish, and wildlife. . .” (WDOE, 2011c, p.3). Washington’s surface waters include, but are not limited to, its saltwaters, inland waters, lakes, rivers, streams, ponds, and wetlands. Washington's water quality standards, including the main four sections of antidegradation policy, designated uses, water quality criteria, and general policies, are detailed within its codified Water Quality Standards for Surface Waters of the State of Washington ([codified Water Quality Standards] WDOE, 2011c), with additional implementation policies and practices described in greater depth within Washington's *Water Quality Program Permit Writer's Manual* ([*Permit Writer's Manual*] WDOE, 2011d). While I briefly outlined the requirements of the anti-

degradation policy and designated uses within the EPA section above, I only discuss the two broad sections of Washington's codified Water Quality Standards of the water quality criteria for toxics and Washington's general policies or implementation tools, as these have been the focus of the current revision and debate.

Washington's Water Quality Criteria for Toxics

The toxic substances section of Washington's codified Water Quality Standards is small, including general statements that discuss toxics control, a short list of the numeric limits set for 28 toxics, and technical notes for the list of toxics. It states that toxics cannot be introduced above natural levels that “adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health. . .” (WDOE, 2011c, p.26). It additionally states that Ecology “shall employ or require” (p.26) testing so as to ensure that designated uses and aquatic life are being protected. Also, it makes reference to using the 1986 EPA water quality criteria to interpret the toxics listed, but subsequently states that the human health criteria used by Washington are within the National Toxics Rule and that the cancer risk rate for carcinogens is one in a million. This disparity is described within the *Permit Writer's Manual* that states that the National Toxics Rule criteria did not apply to the toxics already listed within Washington's then approved water quality standards⁴. Overall, the codified Water Quality Standards do not discuss toxics control in depth, but

⁴ It is assumed that these 28 toxic criteria met EPA approval at the time as the National Toxics Rule (1992) states that EPA was promulgating numeric criteria for all toxics not listed within state water quality standards as well as “any previously-approved State criteria [that] do not reflect current science contained in revised criteria documents and other guidance sufficient to fully protect all designated uses or human exposure pathways, or where such previously- approved State criteria are not applicable to all appropriate designated uses” (Section I6, para. 4).

the Ecology Permit Writer's Manual contains additional background and technical information.

The *Permit Writer's Manual* discusses the factors that provide the foundation for Washington's current human health criteria, which include the National Toxics Rule factors of 70 years of lifetime exposure, eating 6.5 grams of fish or shellfish a day, drinking 2 liters of water a day, and that the acceptable risk for a person to get cancer from drinking water and eating fish and shellfish is one in a million (or 10^{-6}). It also speaks briefly on what is essentially the lack of a relative source contribution in stating,

the criteria do not account for additive or synergistic effects of multiple contaminants on human health, and they contain the assumption that 100% of exposures come from ingesting fish, shellfish, or waters from surface water sources, thus no account is taken of exposures resulting from air, other foodstuffs, or groundwater-derived or public drinking water supplies. (WDOE, 2011d, p.VII-1)

Interestingly, the *Permit Writer's Manual* also includes the entire EPA's fact sheet on their 2000 Methodology, including the new formulas for carcinogens, nonlinear carcinogens, and noncarcinogens⁵. However, despite including this information, they state that the new methodology did not affect or revise the National Toxics Rule.

Washington's General Policies

While Washington's codified Water Quality Standards does not officially have a “general policies” section, it does have a section on “tools for application and criteria of uses” that includes general policies on not only the previously mentioned mixing zones and variances, but also sections on short-term modifications, site-specific criteria, use

⁵ It should be noted that Ecology's 'Cancer Effects: Linear Low-Dose Extrapolation' equation appears to contain a typo wherein RfD (reference dose for noncancer effects) is included in place of the RSD (Risk-specific dose for carcinogens based on a linear low-dose extrapolation). As Washington is operating off of the National Toxic Rule's criteria though (and thus Ecology is not running this equation to determine effluent levels), I assume that this typo has not adversely affected Washington's water quality standards.

attainability analysis, and water quality offsets. Additionally, there is another policy of note on anti-backsliding that is included within the *Permit Writer's Manual* that I will also detail below.

Mixing zones. The mixing zone section of the codified Water Quality Standards is relatively extensive in being the longest section within the tools for application and criteria of uses. While I will not summarize this section in depth, I will briefly discuss Washington's general policies on when Ecology deems it appropriate to designate a mixing zone, the maximum sizes for mixing zones within different types of water, and the Shellfish Protection Agreement with Health.

Prior to permitting a mixing zone, the codified Water Quality Standards state that AKART or "all known, available, and reasonable methods of prevention, control, and treatment" (WDOE, 2011c, p.4) must first be applied by the permittee. It additionally states that a mixing zone must: be issued within a permit or order, consider conditions of critical discharge, not allow for water quality standards to be violated outside the mixing zone, not cause a loss of important or sensitive habitat, not damage existing uses or the ecosystem, and not negatively affect public health.

The maximum sizes of a mixing zone vary dependent on the receiving water body and discuss distance, flow, width, and surface area (see Table 2). In addition to these, there are policies for how far the acute criteria zone (the outer edge of where the acute or short term criteria need to be met) can extend within the mixing zone, conditions for which overlapping mixing zones are allowed, requirements that sewage and point source stormwater that contains "process wastewater" must follow the same general rules

(WDOE, 2011d, p.43), and situations where exemption are considered. Ecology will consider exceptions from both the mixing zone sizes and overlapping policies when a

Table 2

Washington State's Maximum Sizes for Mixing Zones

	Extent / Distance	Flow Utilized	Width Occupied	Surface Area
Rivers and Streams	≤ 300 ft (downstream) ≤ 100 ft (upstream)	$\leq 25\%$	$\leq 25\%$	NA
Estuaries	≤ 200 ft	NA	$\leq 25\%$	NA
Oceanic	≤ 300 ft	NA	NA	NA
Lakes and Reservoirs	$\leq 10\%$ of the water body volume	NA	$\leq 15\%$	$\leq 10\%$

Note. Lakes and reservoirs with a mean detention time (the length of time it takes water to discharge from the lake or reservoir) of greater than 15 days must meet special conditions before being allowed mixing zones.

discharge existed before 1992, the discharge itself or the flow of the discharge would greater benefit or protect existing uses, and a final catch-all of “[w]here the exceedance is clearly necessary to accommodate important economic or social development in the area in which the waters are located” (p.44). If an exception is granted though, Ecology states that said each one will be re-examined during permit renewals and permittees will be assessed for an increased ability to comply.

While not detailed within the codified Water Quality Standards, the *Permit Writer's Manual* states that Ecology has a Shellfish Protection Agreement with Health in place wherein permit writers should discuss mixing zone locations with Health to ascertain if there are shellfish beds near an outfall. Ecology states that it is Health's responsibility to set prohibited areas surrounding permittee outfalls that are in proximity to shellfish production areas. Also noted within this section is a request from Health to

Ecology that their permit writers carefully consider the efficacy of certain methodologies in providing municipal wastewater discharge permits as human viral pathogens from these dischargers can affect shellfish beds.

Variances. The codified Water Quality Standards section on variances is very brief and speaks mainly to the process by which variances need to be approved, while the *Permit Writer's Manual* discusses variances slightly more in depth. The codified Water Quality Standards state that Ecology will allow variances up to five years, at which point they go under both public and “intergovernmental” review again. It additionally states that variances are only valid once they have been included in the Water Quality Standards and then approved by EPA. No variances are currently listed within the codified Water Quality Standards (WDOE, 2011c). The *Permit Writer's Manual* (WDOE, 2011d) discusses the meaning and provides insight into the rarity of variances within Washington's current water quality standards, stating “[a]s the term implies, a variance is an exceptional situation. A permit writer might never work on a variance but should know what they are and the general procedure for handling them” (p.XVI-3). It states that a request for a variance is either completed during the rule-making period or within the “first permit period” after the rule-making is completed. It lists five Federal variances for certain economic circumstances, toxics, publicly owned treatment works, innovative technology, and fundamentally different factors; and lists no State variances. The *Permit Writer's Manual* goes on to state that as Washington has technology-based controls wherein all known, available, and reasonable treatment (AKART) must be applied, this “may negate the use of the Clean Water Act variances in this state” (p.XVI-5). In supporting this assertion, Ecology uses the example of when they denied marine waivers

to various cities who requested to discharge sewage into Puget Sound without applying secondary treatment. Ecology denied this variance as they determined that secondary treatment for sewage fell under AKART.

Short-term modifications. Water quality standards can be modified for the short-term in Washington to “accommodate essential activities, respond to emergencies, or to otherwise protect the public interest. . .” (WDOE, 2011d, p.45). Ecology states that such short-term modifications should generally only extend for hours or days, but that a longer term modification can be allowed when it is a part of a long-term operation, maintenance, restoration, or watershed management plan and/or pest/noxious weed control or management plan. An additional exception could occur for projects such as dam removals wherein the long-term benefits outweigh the short-term impacts to the environment.

Site-specific criteria. The codified Water Quality Standards (WDOE, 2011c) only briefly discusses the policy on site-specific criteria, stating that such criteria can be adopted so long as the existing and designated uses are protected and scientifically justifiable according to EPA guidelines. The *Permit Writer's Manual* is nearly silent on this topic as well. Like variances, site-specific criteria must be reviewed and approved by EPA and then included within the codified Water Quality Standards.

Use attainability analysis. Similar to site-specific criteria, the use attainability analysis (UAA) is not discussed in depth in either the codified Water Quality Standards or the *Permit Writer's Manual*. The codified Water Quality Standards do provide the background though that a UAA scientific study is the only avenue by which a designated use can potentially be removed. In addition to the results of a UAA needing to be

approved by EPA and included within the Water Quality Standards before going into effect, it also states that the approval of a UAA is dependent on public involvement, intergovernmental coordination, and tribal consultation.

Water quality offsets. A water quality offset is as much as the name implies, a situation where the pollution is reduced and “result[s] in a net environmental benefit” (WDOE, 2011c, p.49). These offsets can be used to negate a discharge so as to meet a Tier 2 waterbody designation or help meet a total daily maximum load (TMDL).

Anti-backsliding. While not technically a “general policy” of water quality standards, there is a section on “anti-backsliding” within the Permit Manual (WDOE, 2011d). Ecology states that while State law does not discuss anti-backsliding, Federal requirements generally prohibit the re-issuing of a permit that allows more pollution than the previous permit. There are key exceptions to this rule, such as situations where Ecology made a mistake or there is new information available that would dictate a less stringent permit. Regardless of whether an exception is approved to the anti-backsliding policy, no permit can be re-issued that fails to meet water quality standards, Federal effluent guidelines, or State technology-based treatment requirements.

Other State and Tribal Water Quality Standards

Within the overarching debate of Washington State's revising water quality standards, reference to and discussion of other states has occurred for both context as well as arguments for either issuing more or less stringent criteria. The most often cited state has been Oregon, which recently raised its water quality standards using a 175 gram/day fish consumption rate and 10^{-6} cancer risk rate. Below, I will discuss the fish

consumption rates and cancer risk rates of all states and authorized tribes, as well as discuss the current status of the neighboring states of Oregon and Idaho.

State and Tribal Fish Consumption Rates and Cancer Risk Rates

Below, I provide a broad overview of the fish consumption rates and cancer risk rates that are used by other states and tribes, with the former concentrated on the fish consumption rates used by tribes in Washington.

State fish consumption rates and cancer risk rates. The vast majority of states (38 out of 50) currently have fish consumption rates of either 6.5 grams/day or 17.5 grams/day, which are respectively the minimum EPA recommended defaults used within the 1992 National Toxics Rule and the 2000 methodology. The rest of the states use fish consumption rates that range from 7.5 grams/day to 175 grams/day (WDOE, 2013d). In regards to cancer risk rates, the majority of states (35) currently use 10^{-6} , 14 states currently use 10^{-5} , and one state uses a combination of 10^{-5} and 10^{-6} (WDOE, 2013c). The cancer risk rate is an important factor in calculating criteria and EPA (n.d.i.) has stated that it can be considered as changing the decimal point backward or forward for a fish consumption rate and/or other factors. Below, I have included a map of the fish consumption rates by state (Figure 6), as well as what I am referring to as a “normalized” map (Figure 7) that lists the fish consumption rates by state, if each state used a 10^{-6} cancer risk rate. As demonstrated by the map, when a normalized cancer risk rate is used, the decimal point moves forward and fish consumption rate drops by a multiple of ten. For the states that use a 10^{-5} cancer risk rate, this change essentially drops the fish consumption rates anywhere from 5.85 (in the case of Alaska) to 27 grams/day (in the case of Minnesota).

Fish Consumption Rates by State

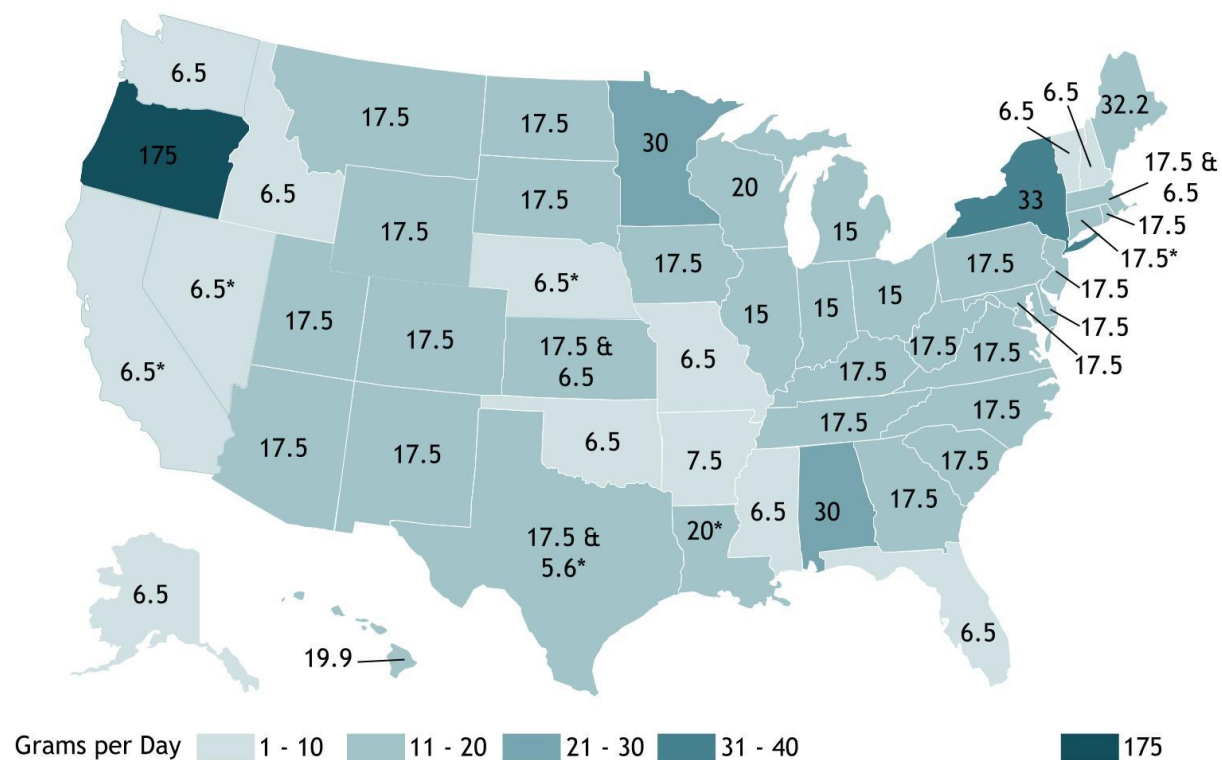


Figure 6. Fish consumption rates by state⁶

⁶ Asterisks indicate scenarios wherein the fish consumption rate may vary for specific toxics or locations. California uses a higher (18.7, 19.5, and/or 32 grams/day) rate for mercury. Connecticut uses either 17.5 or 6.5, but uses 17.5 grams/day for most toxics. Louisiana uses a 6.5 grams/day for Monte Sano Bayou. Nebraska uses a higher 32.4 grams/day rate for mercury. Nevada uses a higher 18.7 grams/day rate for mercury. Texas uses a 10 or 15 grams/day rate for mercury.

Fish Consumption Rates by State

Rates Normalized for Cancer Risk Rate of 10 to the Minus 6

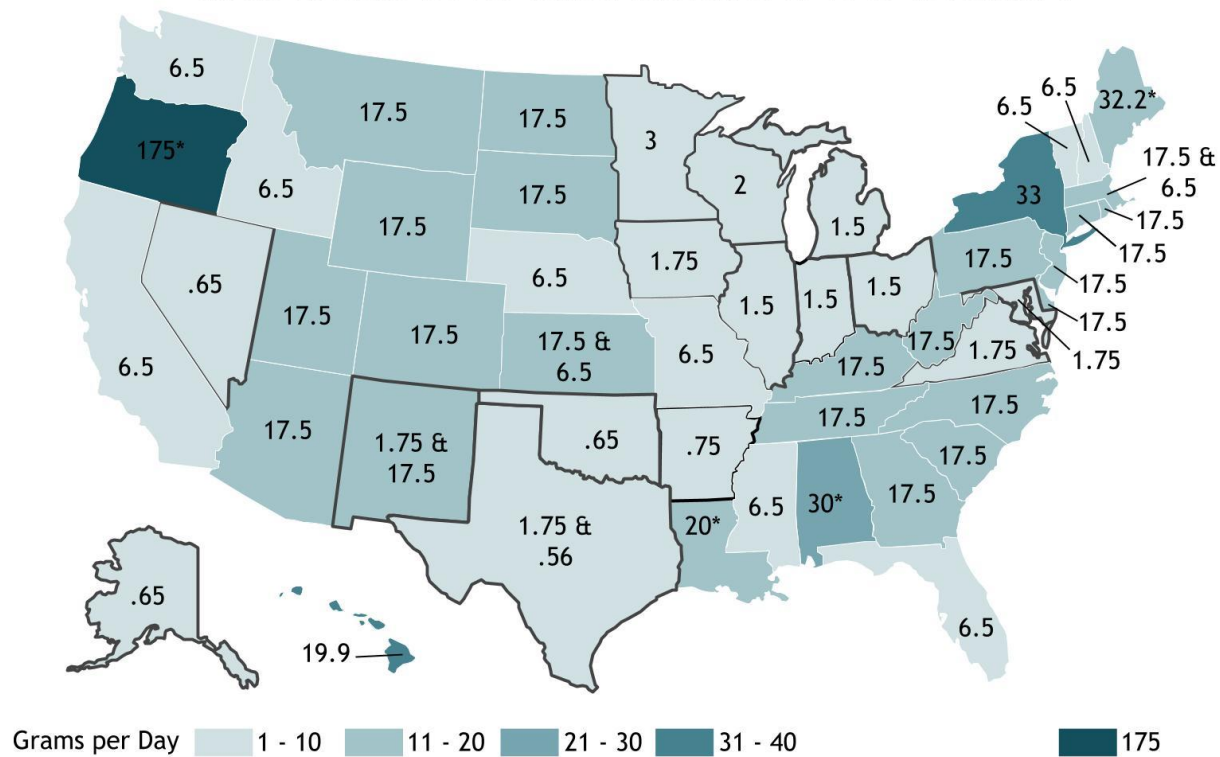


Figure 7. Fish consumption rates by state (normalized for cancer risk rate of 10^{-6})⁷

⁷ Asterisks indicate scenarios wherein a different cancer risk rate may vary for specific toxics. Maine uses a 10^{-4} rate for arsenic. Alabama uses a 10^{-5} rate for arsenic. Louisiana uses a 10^{-5} rate for 2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) and hexachlorocyclohexane (lindane, gamma BHC). Oregon uses 10^{-5} and 10^{-4} rates for arsenic.

Tribal fish consumption rates and cancer risk rates. There are currently 41 tribes that have approved water quality standards, 8 of which are in Washington (EPA, n.d.h.). In some ways, tribal fish consumption rates are similar to the state fish consumption rates in that the majority follow EPA recommended criteria. Eleven of the 41 tribal water quality standards either use the familiar 6.5 grams/day or 17.5 grams/day fish consumption rate and an additional 16 tribal water quality standards do not explicitly reference a fish consumption rate, but most instead provide a list of numeric criteria that were adopted from EPA (and thus assumed to be based off of either 6.5 grams/day or 17.5 grams/day as these are the EPA previous and current defaults for criteria). Tribes differ from states though, but continue in the vein of using EPA recommended defaults, in that 5 tribes use the EPA's recommended fish consumption rate for subsistence fishers, which is a much larger 142.4 grams/days. There are also tribes that use fish consumption rates higher than this recommended default, such as the Confederated Tribes of Warm Springs that uses 170 grams/day, the Confederated Tribes of Umatilla that uses 389 grams/day, and it should be noted that while the Spokane Tribe currently uses 83.6 grams/day, they submitted a fish consumption rate of 836 grams/day in 2010 that EPA has not yet approved. In regards to the cancer risk rates, the majority of the tribes (29 of 41) use a 10^{-6} cancer risk rate, with only 3 tribes (all within the Great Lakes region) listing a 10^{-5} cancer risk rate. However, 9 tribes do not explicitly include a cancer risk rate within their water quality standards⁸ and one Tribe (Colville) does not include a cancer risk rate as they currently only use narrative criteria. I have included a table below

⁸ While I've postulated on the fish consumption rates used by tribes that don't explicitly state a rate within their water quality standards, I don't feel comfortable doing so for the cancer risk rates used. While the cancer risk default used by EPA is a 10^{-6} , it is possible that these tribes are using either the national default rate of 10^{-6} or their state's default rate, which could be either 10^{-6} or 10^{-5} .

(Table 3) of the approved Washington tribal fish consumption rates and cancer risk rates.

As demonstrated below, three of the eight Washington tribes use the EPA subsistence fishers default of 142.4 grams/day and two additional Washington tribes are the process of proposing or obtaining fish consumption rates that equal or are higher than that rate. All Washington tribes, with the exception of Colville that uses narrative criteria, use a 10^{-6} cancer risk rate.

Table 3

Washington Tribal Fish Consumption Rates and Cancer Risk Rates

<i>Tribe</i>	<i>Fish Consumption Rate</i>	<i>Cancer Risk Rate</i>
Confederated Tribes of the Chehalis Reservation	6.5 grams/day	10^{-6}
Confederated Tribes of the Colville Reservation	Narrative criteria	None listed
Kalispel Indian Community	17.5 grams/day	10^{-6}
Lummi Nation	142.4 grams/day	10^{-6}
Makah Nation	142.4 grams/day	10^{-6}
Port Gamble S'Klallam Tribe	142.4 grams/day	10^{-6}
Puyallup Tribe of Indians	6.5 grams/day	10^{-6}
Spokane Tribe of Indians	83.6 grams/day	10^{-6}

Note. Kalispel uses a fish consumption rate of 6.5 grams/day for nickel, arsenic, and chloroform; Puyallup has proposed, but not yet submitted, a fish consumption rate of 142.4 grams/day; and Spokane submitted a fish consumption rate of 836 grams/day in 2010, but EPA has not yet approved this submission.

Oregon and Idaho Water Quality Standards

The neighboring states of Oregon and Idaho both have a history of proposing water quality standards that were subsequently denied by EPA as neither standard used high enough fish consumption rates. Despite the fact that the states' proposed water quality standards based their fish consumption rates on the EPA's 2000 methodology's recommended minimums of 17.5 grams/day, they were rejected on the basis that they did not incorporate local data and thus provide adequate protection for local fish consumers.

Oregon received disapproval from EPA in 2010 for State standards they adopted in 2004 that used a fish consumption rate of 17.5 grams/day (Oregon Department of Environmental Quality [ODEQ], n.d.). Oregon then proceeded to propose new standards that were approved by EPA in 2011 that used a much larger fish consumption rate of 175 grams/day, a cancer risk rate of 10^{-6} and included revised permitting tools of compliance schedules, variances, in-take credits, and site-specific background pollutant criterion (ODEQ, 2011). There is one exception to the 10^{-6} cancer risk rate for the toxic arsenic that uses both a 10^{-5} and 10^{-4} cancer risk rate, with the former for organisms only and the latter for both water and organisms (WDOE, 2013c). Oregon reviewed and used tribal fish consumption rate surveys from both Oregon and Washington tribes, as well as Asian Pacific Islander surveys in determining the 175 grams/day. An often cited study within the Oregon update was the 1994 fish consumption rate survey of the Nez Perce, Yakama, Umatilla, and Warm Springs Tribes that determined that approximately 170 grams/day fish consumption rate was representative of the 95th percentile of both fish and non-fish consumers (CRITFC, 1994).

Idaho received disapproval from EPA in 2012 for State standards they adopted in 2006 that, again, used a fish consumption rate of 17.5 grams/day. Idaho is still revising their water quality standards and, according to their website, plans to discuss their preliminary draft rule in June, 2015 (Idaho Department of Environmental Quality [IDEQ], n.d.).

Conclusion

There is an extensive background of incredibly dense and evolving criteria that comprise state and authorized tribal water quality standards rulemaking. Washington,

forced to adopt minimum toxics standards by EPA in 1992, is now in the process of creating state-specific human health criteria that includes a complicated set of criteria including fish consumption, cancer risk, bioaccumulation, body weight, drinking water, and relative source contribution for both carcinogen-causing toxics and non-carcinogen causing toxics. While the EPA is the overarching Federal authority for reviewing and approving water quality standards, states and authorized tribes are delegated the authority to create their own standards.

EPA's recommended human health criteria defaults have evolved since 1992, with changes to most criteria. Their 2000 Methodology represented an extensive overhaul of not only the criteria, but how those criteria were calculated. The EPA's current methodology and criteria include an incorporation of a default relative source contribution for non-carcinogens, updates to the fish consumption rate, and draft updates for fish consumption, body weight, and drinking water. However, despite these defaults, the EPA highly recommends that states or authorized tribes use their own local data for fish consumption and allows them to generally choose a cancer risk rate of either 10^{-6} or 10^{-5} . While EPA did set a 10^{-6} cancer risk rate as a default in 1992, they provided the 14 states that were subject to the National Toxics Rule the option of choosing a 10^{-5} or 10^{-6} rate. Washington adamantly chose a 10^{-6} rate, stating within their comments that a 10^{-5} rate would only be appropriate if EPA were to consider the effects of multiple contaminants.

In speaking to the choice to use a cancer risk rate of either 10^{-6} or 10^{-5} , EPA states that both could be appropriate for the general public, as long as those populations most at risk are protected at a 10^{-4} risk level. The EPA caveats this by stating they are not

advocating for states and authorized tribes to use a 10^{-4} risk level for the populations that are most exposed, but that they felt the need to ensure that this level of risk would not be exceeded. They also state that either a 10^{-6} or 10^{-5} risk rate can be chosen as long as there is public participation in choosing the rate and that the most at-risk populations have been identified and the risk rate protects them.

As demonstrated by the fish consumption rates of other states and tribes, most operate off of EPA recommended standards that were in place when they adopted water quality standards, with most either 6.5 or 17.5 grams/day. The majority of other states (35) use a 10^{-6} cancer risk rate, with the rest using a 10^{-5} cancer risk rate or a combination of the two. When normalizing the fish consumption rates for the cancer risk (i.e. changing the decimal point), certain states drop down to fish consumption rates as low as .65 grams/day, as in the case of Alaska, or 1.5 grams/day in the case of Michigan. Tribal fish consumption rates follow a similar pattern to that of states in generally following EPA recommended defaults, but vary in either using a 6.5, 17.5, or 142.4 grams/day, with the latter the recommended default for subsistence fishers. In Washington, eight tribes have approved water quality standards for their reservations, with one using narrative criteria, three using 6.5 or 17.5 grams/day, one using 83.6 grams/day, and three using the much larger subsistence 142.4 grams/day. All tribes, with the exception of the tribe that uses narrative criteria, use a 10^{-6} cancer risk rate.

The EPA, as the overarching authority, has the above influence over states and authorized tribes in providing default ranges that have generally been adopted by states and tribes. In addition, EPA has the authority to review, disapprove, and even promulgate standards for states and tribes. The EPA's ability and practice of providing extensive

reviews and requiring states to revise their proposed standards is demonstrated by the reviews of the neighboring states of Idaho and Oregon. While reviews and recommended changes are common, EPA promulgation is rare and has most often occurred at the aggregate to bring a group of states up to a certain standard, as with the National Toxics Rule. EPA reserves this right, but describes promulgation as a last resort and occurring only when something within the system has gone awry.

CHAPTER V

NARRATIVES OF WASHINGTON'S WATER QUALITY DEBATE

Introduction

While I have provided a short background of the current public and policymaking debate surrounding the update of Washington's water quality standards, I will now discuss a more in-depth timeline of the debate and analyze the positions and narratives of the stakeholders and governments that have been most active within this debate and vying for influence and control over the overarching discourse. I will first discuss the overall debate from roughly 2011 to approximately December, 2014 and then analyze a subset of the competing public narratives of the two groups of Keep Our Seafood Clean Coalition, a joint tribal and environmental group coalition, and Association of Washington Business (AWB), an association of many Washington industries.

Current Water Quality Standards Debate

Below, I detail the current debate concerning the fish consumption rate and water quality standards through discussion of the early fish consumption rate outreach and analysis; public comments on Ecology's first fish consumption rate Technical Document; Republican objections and industry lobbying; Ecology shift, delay, and stakeholder engagement; and the Governor press release and Ecology draft rule.

Early Fish Consumption Rate Outreach and Analysis

The seeds of the current water quality standards update have been brewing for years, with discussions to revise the State's fish consumption rate first occurring after the 1994 fish consumption rate report by the Columbia River Intertribal Fish Commission (CRITFC). This report discussed the much higher fish consumption rates of the Columbia

River tribes and highlighted the inadequacy of Washington's standard to protect them. However, discussions to incorporate higher fish consumption rates into the State's standards at the time were reportedly a failed effort (McClure, 2013). The fish consumption rate was brought up again though in 2010 and 2011, when Ecology conducted the State's water quality standards required three year review and received multiple comments that the 6.5 gram/day rate was not accurate for Washington State (Sturdevant, 2012b). These commenters included tribes (NWIFC, 2012a) as well as the EPA. EPA Region 10 strongly recommended Ecology create a Washington-specific human health criteria to replace the National Toxics Rule criteria, stating that EPA believed that the 6.5 grams/day fish consumption rate was not accurate for Washington's fish and shellfish consumers (Brimmer & Baca, 2013). It was after these comments and during this time period that Ecology included within their five year plan the creation of a Washington-specific human health criteria (Sturdevant, 2012b).

Nine months after receiving comments from EPA, Ecology released a Fish Consumption Technical Document (Technical Document) in September, 2011. They prefaced the document by discussing the importance of Washington's water resources to the economy and to fish-consuming public and tribes, explaining that two different fish consumption rates were currently being used for the surface water quality standards (6.5 grams/day) and for the Model Toxics Control Act Cleanup Regulation (54 grams/day). They stated that they were considering changes to these regulations as well as the Sediment Management Standards over the next few years as these fish consumption rates were not representative for Washington citizens. Ecology stated that the purpose of the document was to support discussions on deciding a default fish consumption rates or rate

that was technically defensible and could be used for their regulations. Within the document, Ecology reviewed tribal and Asian and Pacific Islander fish consumption rate studies and the methodologies for the fish consumption rate studies, analyzed the survey data that would be applicable to Washington fish consumers, provided the regulatory context for using fish consumption rates, discussed site-specific situations, and provided recommendations. Using this information, their preliminary recommendations for a fish consumption rate range was 157 to 267 grams per day. In discussing this recommended fish consumption range, they stated, “Ecology believes that a default fish consumption rate (or rates) should be protective of all people in Washington who eat fish, including those individuals that eat a lot of fish, such as Native Americans, Asian and Pacific Islanders, and some recreational fishers” (WDOE, 2011a, p.7). They stated that the document was meant to serve as a starting point for discussion and they also presented open questions for further discussion that asked whether and/or how salmon should be included within the fish consumption rate given their anadromous nature.

Concurrent with the release of the Technical Document, Ecology engaged in a contract with the Northwest Indian Fisheries Commission (NWIFC) to consult with tribes with the hope of finding a tribal consensus on what would be an acceptable fish consumption rate for incorporation into revised 2013 Washington State water quality standards. Other tasks within the NWIFC contract with Ecology included assisting Ecology in informing the public and stakeholders about the human health criteria, the fish consumption rate, and the need for a higher rate; and communicating with Ecology to develop a “mutually agreeable decision-making process and time frame to agree on a mutually acceptable Washington State fish consumption rate” (NWIFC, 2012a). NWIFC

and their consultants created a technical workgroup to review fish consumption and water quality technical documents, conducted outreach to stakeholders and other tribes, and coordinated with Ecology.

Technical Document Public Comments

In releasing the Technical Document, Ecology opened up a four month public commenting period that stretched into January of 2012. A slew of far-ranging comments were submitted from tribes, industries, environmental groups, municipalities, private citizens, and EPA, among others, on the draft fish consumption rate range and the details of the technical document (WDOE, n.d.a.).

In addition to many individual tribal comments, Northwest Indian Fisheries Commission (NWIFC) submitted comments stating that while the range provided in the Technical Document was a step forward, that the range did not incorporate suppression of traditional fish consumption values that had been estimated at 1,000 grams/day, that tribes were supportive of the higher end of the range due to higher fish consumption rates documented within Washington tribes, and that the rate should be at least as high as Oregon's 175 grams/day. Additional comments included a note that tribes would continue to set their own standards, site-specific fish consumption rates in tribal usual and accustomed areas should be more protective than defaults, salmon should be included within the rate, and that the other criteria, specifically the cancer risk level, should not be reduced due to a higher fish consumption rate (Frank, 2012b).

A suite of environmental groups, the Spokane Riverkeeper, Columbia Riverkeeper, North Sound Baykeeper, and Puget Soundkeeper Alliance, submitted comments similar in content to the tribes. They supported the work of Ecology in

adopting an updated fish consumption rate, recommended clarification that site specific fish consumption rates would be more protective or higher than the default rate being proposed, urged Ecology keep salmon within the fish consumption rate, and agreed with NWIFC's comments that the minimum fish consumption rate should be 175 grams/day (VandenHeuvel, Wilke, Mihailovich & Krogh, 2012).

EPA's comment letter to Ecology was laudatory as it established the initial steps to adopt a Washington-specific fish consumption rate using scientific information. EPA encouraged speed in stating "[w]hile we understand the need for continued coordination with your stakeholders and the Tribes, we encourage you to quickly incorporate this information into your rulemaking process and move forward with adopting criteria" (Jennings, 2012, p.3). They stated that this issue was a priority for EPA Region 10 and offered their support to Ecology to work with them through the update of the human health criteria.

Industries, including Weyerhaeuser, AWB, and Northwest Pulp & Paper, among others, were not as pleased with the Technical Document. The Northwest Pulp & Paper comments provided a background on the number of Washingtonians employed by their company and that water quality regulations highly affect their industry. Their specific comments included that changes to the fish consumption rate needed to be justified to benefit the overall public health, that the default fish consumption rates overestimated the majority of Washington's fish consumption, and that Ecology's analysis within the Technical Document was flawed. They concluded that the policy choices by Ecology would have "significant cost implications to public and private entities" and that this may

affect “the ability to attract new industrial and commercial development in the state”
(McCabe, 2012, p.2)

Republican Objections and Industry Lobbying

Due to the public documents request and reporting by the journalists at *InvestigateWest*, emails between Ecology and the then Governor Gregoire are now available online and show a Republican and industry backlash to the fish consumption rates issue and Technical Document. Governor Gregoire sent an email to the Director of Ecology, Ted Sturdevant, on the day that the public commenting period for the Technical Document ended stating “Republicans are very concerned about this issue and brought it up at a leadership meeting. What is it?” (Henry, April 23). From January to July 2012, a flurry of intense behind-the-scenes objections and lobbying from Republicans and industry groups, particularly The Boeing Company (Boeing), occurred.

In late January, Republican Senator Mike Padden sent Governor Gregoire a letter pointing to a raised fish consumption rate as potentially deterrent to business in the State. Soon after, Governor Gregoire met with Director Sturdevant and he agreed to delay the timeline for rulemaking. Emails between Governor Gregoire’s staff and Director Sturdevant discussed who would take “ownership” of this delay, with them agreeing that the Governor would take limited ownership at that time. Director Sturdevant went on to write a letter to all those who provided comments on the Technical Document, but emailed Keith Phillips, Governor Gregoire’s lieutenant, days later saying that his “letter didn’t calm everyone down” and that he was “a little breathless” due to the negative reactions from the Republicans on the fish consumption rate (Henry, 2013).

Negative Republican reactions to the fish consumption rate issue continued to escalate and Ecology began meeting with industries, including Boeing, over the next couple of months. In one meeting memo written by one of the Governor's staff, Republican Representative Richard DeBolt reportedly did not want Director Sturdevant to slow down on fish consumption rate issue, "he wants him to stop" (Henry, 2013). By late February, the Washington Senate had included within their draft budget a requirement that Ecology engage in additional studies, including a cost benefit analysis, before adopting a revised fish consumption rate. A day later, a Puyallup Tribe lawyer, Sam Stilner, sent an email to environmental groups and other tribes to inform them of the draft budget language. Tribes and organizations quickly drafted and sent letters to Governor Gregoire and various legislators expressing support for the fish consumption rate update and Ecology. Ultimately, the language requiring Ecology to engage in additional fish consumption rate studies was removed from the final version of the Senate budget in early May (Henry, 2013).

AWB sent Ecology a letter in April, 2012 reiterating concerns they had expressed earlier that year and asked Ecology to not incorporate a default fish consumption rate into the sediment management standards and to provide a public commenting period for the revised Technical Document that Ecology was creating. They also asked specific questions regarding whether Ecology was legally required to create human health criteria and what type of implementation tools and process for public input would be included (Chandler, 2012a). A day later, Boeing requested another meeting with Ecology (Henry, 2013). In mid-May, Ecology issued a response to AWB's comments answering various legal questions, including that they were still planning on incorporating a default fish

consumption rate into the sediment management standard and that they did not believe a public commenting period would be needed for the revised Technical Document (Sturdevant, 2012a). However, by mid June 2012, an email between then Governor Gregoire's staff stated that

[t]he rhetoric from The Boeing Company on this topic is becoming increasing [sic] severe. . . Boeing suggested that the path DOE is currently under will cost the company hundreds of millions of dollars and severely hamper its ability to increase production in Renton and make future expansion in the state cost prohibitive. (McClure, 2013)

Within two weeks of this email, discussions began to occur between Governor Gregoire and Director Sturdevant to significantly shift and delay in the update of the fish consumption rate (Henry, 2013).

Ecology Shift, Delay, and Stakeholder Engagement

In late June 2012, Keith Phillips, Governor Gregoire's lieutenant, sent an email to Ecology that described the new plan to shift away from including a default fish consumption rate within the sediment management standards, a delay the fish consumption technical report revisions until the fall, initiating a stakeholder technical group and policy group, and including compliance tools in the rule update. Within the email, Phillips states "Gov wants this presented well. . . [s]he does not want this presented as slowing down or shifting away. . ." (McClure, 2013). Director Sturdevant provided a briefing to tribal staff in early July regarding the shift and Ecology staff meeting notes describe the negative tribal reactions and that "some expressed that they feel let down, misled and that 'promises were broken'" (Henry, 2013). Director Sturdevant released the new timeline and approach to the public in mid-July, emphasizing that

we are not slowing down or backing away from this important work. The question is not *whether* we update the standards, but *how* we best update them. We will proceed in a way that is transparent, inclusive, responsive, and technically credible. (Sturdevant, 2012b)

In mid-August, Ecology began the process of inviting stakeholders and tribes to their planned policy and delegate's processes. Ecology's Policy Forum, for all stakeholders that were interested in the rulemaking process, was held over a year period, including seven meetings from October, 2012 to September, 2013 (WDOE, n.d.e). Ecology's Delegate's Table, a "core group" of the Policy Forum, followed a similar time frame but also included an additional meeting in February, 2014. The Delegate's Table (WDOE, n.d.b.) was invitation-based, with Ecology inviting businesses, environmental groups, local governments, agricultural industries, and Washington, Oregon, and Idaho tribes to participate. Director Sturdevant included within the invitation that the Delegate's Table was not intended as a government-to-government consultation, offering this option throughout the process (WDOE, n.d.d).

Most tribes chose not to participate within these policy tables. Port Gamble S'Klallam Tribe declined the request, reiterating that they were unhappy with the delays, encouraged Ecology to use the current fish consumption rate science, and requested a government-to-government consultation (Sullivan, 2012). NWIFC chairman emeritus discussed this stating "Tribes across the state have rejected Ecology's proposed new roundtable approach to revise the rate because it does not offer a clear, decisive path forward in a government-to-government framework" (Frank, 2012a). He then stated that tribes were discussing the issue with the EPA and called on the new Governor Inslee to "reset" the fish consumption rate update process. It was also during the approximate time

period in mid-2012 that tribes and environment groups partnered to create the Keep Our Seafood Clean Coalition (NWIFC, 2012c).

While the tribes were approaching Ecology on a government-to-government basis and EPA as their Federal trustee, environmental groups and a fisheries association¹ sued the EPA in October, 2013. Within their suit, they stated that the EPA was not meeting their Clean Water Act duties to promulgate standards for Washington State that included an accurate fish consumption rate that was not protective of human health (Earthjustice, 2013). The suit would be dismissed a year later in early September, 2014, when a judge found that the EPA had not failed in its Clean Water Act authority to promulgate standards for Washington as, among other issues, the communications provided were not made by EPA's Regional Administrator and EPA had not made an official determination (Steding, 2014).

Ecology released a revised Technical Document (version 2.0) in January, 2013 that removed the recommended 157 to 267 grams/day fish consumption rate range it provided within the first Technical Document. Within this second Technical Document, Ecology stated that they had received over 300 comments on the first Technical Document, that the revised Technical Document was more narrow in scope, and that it “does not address the policy questions” (WDOE, 2013a).

The Policy Forum and Delegate's Table continued throughout 2013 and additional discussions regarding the water quality standards rule and a multitude of comment letters were submitted to Ecology from EPA, tribes, industries, and local governments throughout 2013 and 2014 (WDOE, n.d.c.). An EPA shift occurred in April,

¹ The groups filing the lawsuit were the Columbia Riverkeeper, Puget Soundkeeper Alliance, Spokane Riverkeeper, Pacific Coast Federation of Fishermen's Associations, RE Sources for Sustainable Communities, and Institute for Fisheries Resources.

2014 though with EPA holding Ecology to their newest timeline that they that had proposed. EPA submitted a letter to Ecology stating that if Ecology did not meet Ecology's new timeline for adopting a rule by the end of the calendar year, then EPA would take its own steps to propose human health criteria for Washington by May, 2015 (McLerran, 2014a).

Governor Press Release and Ecology Draft Rule

Demonstrating the level to which this Ecology rulemaking had risen and the heavy involvement from the Governor's office, Governor Inslee held a press conference in early July, 2014 to discuss Ecology's plan to release a draft water quality standards rule that fall. Within this press release, the Governor unveiled a plan for increasing the fish consumption rate from 6.5 to 175 grams/day, but also increasing the acceptable risk of cancer from 10^{-6} to 10^{-5} for most toxics. He described how, due to other changes made to the equation, about 30% of the toxic pollutant levels would have been able to increase under the new rule. Due to this, Ecology would be enacting a no "backsliding" rule wherein the current 6.5 grams/day at 10^{-6} would stay in place for the 30% of the toxics that would have increased. The Governor stated that "if we had gone to the current 10^{-6} number, it would have resulted in some extremely tough standards, resulting in an unacceptable level of uncertainty for businesses and local governments with little corresponding benefit for human health" (Salerno, 2014).

The Governor also discussed that they would create a special rule for arsenic, include implementation tools to assist dischargers, and create a toxics reduction package that the Governor would advance through the legislature in 2015. He outlined a timeline of issuing a draft rule in September, 2014 and stated that he would ask the EPA to look at

the combined effects of the water quality standards rule and the toxics reduction package in reviewing Washington's standards (Association of Washington Cities, AWC, 2014). Throughout the press conference, the Governor repeatedly stressed the importance of reducing the upland toxics and that his proposed toxics reduction bill would be an essential piece for improving overall water quality (Salerno, 2014).

Many tribes were generally dismissive toward the proposed rule, requesting that the EPA promulgate for Washington and writing a letter to the Governor that "it is incomprehensible that the state would consider changing the cancer risk rate in state standards to a rate that is ten times less protective" (Loomis, 2014). They also pointed to the proposal linking the rule to a toxics reduction legislative packaged as representing an additional delay to the process. AWB told a journalist from *HeraldNet* that they would be waiting to review the draft rule before providing comments, but AWC (2014) stated that while they were waiting to see the rule details, "we are encouraged with the Governor's efforts to put forward a balanced plan to improve the health and safety of Washingtonians."

In late September, 2014, Ecology released a "preliminary draft rule" stating that they would be releasing the official draft rule in January, 2015 (Keep our Seafood Clean Coalition, 2014). In mid-December, the EPA sent a letter to Ecology informing them that as Ecology did not meet their end of 2014 deadline for a new rule, EPA was initiating their Federal rulemaking to amend Washington's human health criteria. EPA still expressed their support for the State's process, but continued to "strongly encourage" the State to consider

the need for the State to base its decision on sound science and the best available data, which provide evidence of fish consumption rates well

above 6.5 grams per day in Washington, and to *explain why a change in the State's long-standing cancer risk protection level is necessary and how it is consistent with its strategy for protecting higher fish consumers in Washington*. (McLerran, 2014b, p.1, emphasis added)

They went to state that they recognized that the State process and rulemaking would be running parallel to the Federal process and that the EPA would pause its rulemaking to review the State's rule, if submitted before the Federal rulemaking were completed (estimated at 9-12 months). EPA discussed that their Federal process would incorporate local and regional information, best available science, and other considerations such as "assessment of downstream waters protection, environmental justice, Federal trust responsibility, and tribal treaty rights" (McLerran, 2014, p.1). Within this letter, they stated they were very aware of the need to protect economic viability while improving water quality and offered to meet with Ecology and key stakeholders to discuss implementation rules.

Contextual Coding of Association of Washington Businesses and Keep Our Seafood Clean and Association

Against the backdrop of the above water quality standards debate, I will now discuss two of these groups, the Association of Washington Businesses (AWB) and the Keep Our Seafood Clean Coalition, more in depth through contextual coding. As seen from above, this is an incredibly dynamic debate. Similar to the timeline for which I have detailed, a note should be made that the documents that I contextually coded below were chosen from the beginning of the debate until approximately December, 2014. There have been additional comments letters, articles, etc. from both groups since that date that are not represented below.

In comparing and contrasting these analyses, it should be noted that NWIFC and

various environmental groups have also submitted extensive and official comment letters to Ecology within the rulemaking process, which I have not contextually coded here. I am choosing to focus on how NWIFC and environmental groups are interacting with and educating the public through this joint effort.

Association of Washington Businesses

The non-fish and shellfish industries have been a significant and influential voice within the fish consumption and water quality standard debate. Although comment letters have been submitted to Ecology from individual non-fish and shellfish industries and municipalities, the AWB has had one of the most consistent and vocal presences within the media and in providing comments and input to Ecology's processes. AWB, "Washington's Chamber of Commerce," is a business association that focuses on economic advocacy and has within its membership "major employers like Boeing, Microsoft and Weyerhaeuser, [and smaller employers with] 90 percent of AWB members employ[ing] fewer than 100 people" (AWB, 2013, para. 18). It is due to their early and sustained efforts at influencing Ecology and the rule-making process that I am choosing to focus my contextual coding analysis on a sample of their letters, press releases, and reports. However, I am including the caveat that their viewpoints might not be representative of all non-fish and shellfish industries that have been active in this debate.

The fish consumption rate and water quality standards documents that AWB has produced or submitted as comments to Ecology include: four comment letters submitted to Ecology; three policy and/or legal review reports submitted to Ecology written by AWB, a Federal Water Quality Coalition, and the National Council for Air and Stream Improvements; a treatment technology report commissioned by AWB, the Association of

Washington Cities (AWC), and Washington State Association of Counties (WSAC); an AWB “President's Perspective” online article, and a press release describing the AWB-commissioned treatment technology report. Additionally, a survey of AWB's known social media accounts show that AWB has posted about the fish consumption rate and water quality standards update three times on Facebook (between the years of 2011-2013) and seven times on twitter (between the years of their twitter account inception of 2013-2014). The three documents that I have chosen to contextually code are AWB's comment letter to Ecology regarding Ecology's draft fish consumption rates technical support document (Chandler, 2012a), their comment letter to Ecology regarding Ecology's revised (version 2.0) fish consumption rates technical support document (Chandler, 2012b), and their press release describing the completion and release of the commissioned study on treatment technology (AWB, 2013).

Sample documents for analysis. Two of the three analyzed documents are comment letters provided to Ecology. The third analyzed document is an online press release directed toward the public. The first comment letter was submitted to Ecology in response to the Ecology's first technical document on fish consumption rates (Chandler, 2012a) in spring of 2012 and the second comment letter was submitted in response to Ecology's second revised technical document version 2.0 on fish consumption rates (Chandler, 2012b) in fall of 2012. The third document was published in winter 2013 and resides online at AWB's website for the purpose of notifying and directing the public to the release of their commissioned study on treatment technology (AWB, 2013).

Both letters contain the same general purpose of providing comments to Ecology and the general structure of consisting of 3-5 pages, being placed on AWB letterhead, and

following the general comment letter format that begins with thanks to Ecology for providing a review opportunity and/or meeting with AWB to discuss, and introductory paragraphs discussing an overarching argument followed by discrete sections that discuss specific components of and comments on the rule-making process and/or technical document. Both comments letters were signed by AWB's Vice President of Government Affairs, Gary Chandler, who is in charge of AWB's legislative and regulatory programs and is their "chief lobbyist" (AWB, n.d.). The two letters differ though in overall scope and tone as the first letter is addressed to Ted Sturdavent, then Director of Ecology, with carbon copy (cc)'s to prominent government officials including then Governor Christine Gregoire, Governor's Policy Office Ken Phillips, Senator Lisa Brown, Senator Mike Hewitt, Representative Frank Chopp, and Representative Richard DeBolt; and the second letter is only addressed to Ecology's Toxics Cleanup Program staff member Adrienne Dorrah, with no included cc's. Additionally, the first letter focuses not only on comments on the surface water quality standards, but on the sediment management standards, wherein AWB asks Ecology to remove a default fish consumption rate from these standards. The first letter also is comprised mainly of a series of questions AWB is asking Ecology to clarify, including asking whether Ecology was required to update the fish consumption rate and human health criteria, and, if so, for the specific statute that required it. The second letter, conversely, occurs after Ecology decided to forgo an updated and default fish consumption rate within the sediment management standards, and after they had revised the technical document to remove the fish consumption rate range.

While the two comments letters share a similar structure, the third press release

document has an entirely different medium and context than the first two letters. The press release resides online on AWB's website and is for the purpose of publicizing an AWB-commissioned study on the ability of current treatment technology to meet the new water quality standards, which is provided as a link at the end of the press release. The press release is characterized by short concise paragraphs, often no longer than one to two sentences, and contains multiple quotes from the AWB president and AWC CEO. The press release does not list an individual author, but includes descriptions and links to the websites of the AWB, AWC, and WSAC, the agencies that commissioned the treatment technology study.

Major themes. While the analyzed documents vary in thematic content, the significant and overlapping themes within the AWB sample documents include the following arguments: 1) new standards will bring significant and increased costs; 2) new standards will be impossible for industries to meet; 3) the importance of relying on accurate science within the technical document and rule-making process; and 4) a presence of emphasizing or valuating language to support and normalize AWB arguments.

1) Significant and increased costs. AWB repeatedly emphasizes the significant and increased costs that new standards would potentially bring, including increased costs to industries, municipalities, the overall State economy, private sector employees, and consumers. This argument of higher and significant costs is often joined in the same sentence with other significant themes that underscore that these costs will also have no positive outcome or will be for no reason, such as the argument that the new standards “would potentially cost billions *with little or no benefit to the environment*” (AWB, 2013,

par. 2, emphasis added), or that the new standards will “have the unintended consequence of compelling unreasonably expensive investments in wastewater treatment and contaminated sediment cleanups for both public and private entities *without demonstrable benefits to human health*” (Chandler, 2013a, p.1, emphasis added). However, the significant and increased costs argument is also often made as a stand-alone statement, as when citing the commissioned technology treatment study, stating the “treatment technology review anticipates additional capital, operating and environmental costs (e.g. higher energy usage) as a result of industrial and municipal efforts to meet the proposed standard,” (AWB, 2013, para. 10) or the State economy at large in stating that the treatment technology analysis “also suggests significant implications for private sector employers and the state’s economic climate if the proposed water quality standards are adopted” (AWB, 2013, par.12). Other prominent arguments that often accompany or are a result of this significant and increased costs theme include the argument that these costs and the uncertainty associated with new rules will lead to a loss or potential loss of jobs as current industries will go out of business and/or new businesses will be unlikely to locate in Washington.

2) *New standards impossible to meet.* As stated above, an often related theme to significant and increased costs is AWB's argument that the new water quality standards will be set to lower levels to which industries will not be able to comply or that will cause considerable uncertainty for industries in regards to compliance. The latter argument is forwarded within the first comment letter to Ecology, with AWB stating that selecting new standards “to levels below natural background concentrations creates uncertainty for the regulated community to achieve compliance” (Chandler, 2012a, p.1). The former

argument of certain future non-compliance is emphasized within the public press release, with AWB stating that their newly commissioned study on treatment technologies (analyzing arsenic, benzo(a)pyrene, mercury, and polychlorinated biphenyls) found that “[e]ven the most advanced water treatment technologies would not be able to meet standards for the four targeted pollutants. Any business or local government would be in violation of the proposed standard, despite making significant investments in technology that would not work” (AWB, 2013, para. 9). They later go on to state that “AWB, AWC and WSAC believe a dramatically more stringent water quality standard, like recently adopted in Oregon, is *literally impossible* for affected municipal and industrial facilities to meet” (AWB, 2013, para. 7, emphasis added). Uncertainty is also a related theme within the public press release, but instead of being connected to compliance (as their commissioned study determined compliance was “impossible”), it is connected to the new standards resulting in uncertainty for the economy: “[a]s the study notes, even if our members do make the required investments, they still won’t meet the proposed standards. And that just feeds uncertainty – about permitting, about growth and expansion of business and, eventually, about jobs in Washington state,” (AWB, 2013, para. 14).

3) Importance of science. The above themes of significant and increased costs, and noncompliance and uncertainty are absent from the second comment letter to Ecology, with AWB instead commenting almost solely on the information that Ecology’s revised technical document should and should not include. However, an overlapping theme within both the first and second comment letters to Ecology is a call to focus on technical details and science, often connecting this with an argument to separate science from “policy.” An example of this theme is within the first comment letter that states “we

believe the Department must take the time necessary to develop fish consumption rates that are both *technically defensible and based on credible science*” (Chandler, 2012a, p.1). The second comment letter delves further into this theme, with AWB expressing their support to Ecology for removing the FCR range from the first technical document, stating “[p]olicy discussions or opinions do not belong in a “technical” document” (Chandler, 2012b, p.1). While AWB lauds Ecology for removing the FCR range from the first technical document due to it being a “policy” decision, they argue that the technical document still needs improvement in this regard, stating that “it is imperative that the TSD presents information that is accurate, comprehensive, and unbiased. The TSD should avoid making conclusions that are *blended statements of both science and policy*. For example, the TSD continues to state that the current FCRs do not accurately reflect how much fish people in Washington eat. Such statements are policy conclusions” (Chandler, 2012b, p.2, emphasis added). Following in this theme, AWB also discusses and points to what they see as data gaps within the technical document, discussing the inclusion of only Oregon's FCR revision (and not other state's processes), as well as the lack of FCR survey data for the general public, arguing that “[a]t a minimum, the Department and the TSD should acknowledge that the lack of a general population fish consumption survey is a significant data gap” (Chandler, 2012b, p.2). Overall, AWB makes consistent references to the need to what they view as “credible” science and argue that science and policy should be considered two separate and distinct entities within Ecology's technical documents and decision-making processes.

4) Valuating Language. In describing or emphasizing their arguments or comments to Ecology, AWB often includes valuating language such as adjectives and

adverbs to support and/or normalize their arguments. Examples of this include their statements that any updates to the FCR “should be based on *credible* science and avoid *absurd* results” (Chandler, 2012b, p.1, emphasis added), and “if the TSD is to be *credible*, the Department cannot start with the conclusion that the current FCRs are inaccurate or fail to adequately protect fish consumers” (Chandler, 2012b, p.2, emphasis added). The use of the words credible and absurd directly and indirectly serve to emphasize and normalize AWB's argument that the first technical document did not contain believable or sound science and came to absurd conclusions. Additional examples of adjectives/adverbs AWB uses to support and normalize their arguments include their statement that new standards will lead to “*unreasonably* expensive investments” (Chandler, 2013a, p.1, emphasis added) and that industries “need a standard that can be *reasonably* met with existing technology” (AWB, 2013, para. 13, emphasis added). These statements argue that not only will industries have additional expenses to meet new standards, but that the need for industries to make costly investments would not be fair or within reason. Related to this theme of reasonableness, AWB repeatedly stresses within their press release to the public (AWB, 2013) the need for “a *balanced and practical* solution” (para. 11, emphasis added), “*balance* in our conversation about water quality standards” (para. 13, emphasis added), and that “we have to keep working on a more *equitable* solution for everyone” (para. 16, emphasis added). Ultimately, these qualifiers, while generally focusing on credibility or reasonableness in the comments to Ecology and equity, practicality, or balance in the press release to the public, serve as devices to either normalize AWB's views and arguments, or as an emotional plug for AWB, wherein they are seeking to portray themselves as the reasonable voice in the debate, only asking for a

much-needed compromise.

Keep Our Seafood Clean Coalition

NWIFC, as a support organization for 20 treaty tribes in Western Washington, and Salmon Defense, a nonprofit also associated with NWIFC, have partnered with the environmental groups People for Puget Sound, Puget SoundKeeper Alliance, and Resources for Sustainable Communities to create the Keep Our Seafood Clean Coalition. Washington's tribes, tribal consortia, and environmental groups have been active voices within this debate with myriad documents, comment letters to Ecology, and materials available. However, I am choosing to focus my contextual coding on the Keep Our Seafood Clean Coalition as it is a partnership between these two broad groups who are advocating for higher water quality standards. The total Keep Our Seafood Clean Coalition documents and positions available online are extensive as they have created an eponymous website to house content and link to news articles, environmental group graphics and articles, and NWIFC opinion pieces, articles and video, with the majority in the latter category. They additionally created a Facebook page for the Keep Seafood Clean Coalition in December, 2014 that also links content to the website, environmental group social media postings, NWIFC videos and postings, and other news articles.

Sample documents for analysis. The three documents that I have chosen to contextually code are all on the Keep Our Seafood Clean website, including a linked NWIFC document explaining the fish consumption rate (NWIFC, 2012d), a linked opinion piece written on the fish consumption rate by Billy Frank, Jr., NWIFC chair emeritus (Frank, 2013b), and a website article explaining the cancer risk rate (Keep Our Seafood Clean Coalition, n.d.). All three documents for analysis are released and

intended for the public, residing on the Keep Our Seafood Clean website. Two of the three documents were created by NWIFC, the first written by the NWIFC Chair emeritus (Frank, 2013b) with links to staff contacts, and the second (NWIFC, 2012d) written by NWIFC with links to staff contacts. The third document (Keep Our Seafood Clean, n.d.) originates and resides on the Keep Our Seafood Clean website as a page within the broader website.

The first document is a four page document explaining Washington's fish consumption rate update. It was released in 2012 during the time period that Ecology had released their first Technical Document, referring to Ecology's recommended 157-267 fish consumption rate range. All four pages devote nearly the same amount of page space to pictures as they do to text, framing each page with pictures of tribal members filleting salmon, the size of fish portions under Washington and Oregon's standards, barbecued salmon, and harvesting shellfish. The text size varies with larger text framing each page and section, including a frequently asked questions, and ending with a bulleted list of why people are advocating for a higher fish consumption rate. There is one quote from NWIFC chair emeritus, Billy Frank, Jr.

The second document is in the style of an editorial, released as part of monthly *Being Frank* articles written by the NWIFC chair emeritus. It was written in early 2013, referring to the update of the fish consumption rate and opponents desire to increase the risk of cancer to one in a 100,000. With the exception of the bolded title, the text size and format are consistent throughout the article. The editorial is a little over a page long consisting of ten paragraphs, most short at two to three sentences long.

The third document, living on the Keep Seafood Clean website, is focused on explaining the cancer risk rate. It is not dated, but due to its focus on the cancer risk rate, is assumed to be released in late 2014. Presented as an informational page to learn about the cancer risk rate, the text size and format vary, with portions of the text larger in font size or bold format to delineate their emphasis. Each paragraph is short, generally consisting of one concise sentence, with the occasional paragraph toward the end of the article consisting of two sentences. The article contains two quotes from the NWIFC chair and Swinomish Tribal fisheries manager, Lorraine Loomis, and an internal link to learning more about the fish consumption rate.

Major themes. While the analyzed documents vary in thematic content, the significant and overlapping themes include: 1) the current fish consumption rate is inaccurate; 2) there is a need to prevent pollution; 3) protection is needed for all people; and 4) a presence of emphasizing or valuating language to support the Keep Our Seafood Clean Coalition's arguments.

1) Fish consumption rate is inaccurate. A prominent theme within two of the three documents is that the current fish consumption rate of 6.5 grams/day, described either as one 8 ounce meal or less than one meal of seafood a month, is the lowest in the country and inaccurate. These documents, released relatively early in the water quality standards debate in 2012 and 2013, focus on providing education on the fish consumption rate or the debate. The first document focuses on defining the fish consumption, visualizing the current 6.5 grams/day and juxtapositioning it next to Oregon's larger 175 grams/day standard. Both documents discuss the fish consumption rate as "not *accurate*" often linking it to another major theme of protection (NWIFC, 2012, p.2, emphasis

added). Both documents discuss the origins or age of the current water quality standards as being “set more than 20 years ago” (Frank, 2013b).

2) *Need to prevent pollution.* In a similar vein to the above theme, additional education is provided on why the update is necessary, linking it to the need to limit or prevent pollution. The fish consumption explanation document states that “[m]any Washington residents believe it is *pollution that should be* limited, not the amount of fish and shellfish we eat” (NWIFC, 2012d, p.2, emphasis added). The Being Frank article also links the need to limit pollution and not eating fish and shellfish, stating that eating “fish and other seafood is a healthy choice *as long as those foods don’t come from polluted waters*” (Frank, 2013b, para.1, emphasis added). As demonstrated by these statements, the need for preventing pollution is often coupled with a statement that fish and shellfish consumption should not be limited and are healthy to eat as long as they do not come from polluted waters. The third document, in quoting the NWFIC chair and Swinomish tribal fisheries manager, links pollution to the economy in stating “we cannot continue with a *pollution-based* economy” (Keep Our Seafood Clean, n.d., para.11).

3) *Protection is necessary.* By far the most frequent word within all three documents is that of “protect” or “protection.” It often is used in concert with collective first person plural of “we” or “our” as in the “rate is supposed to *protect us*” (Frank, 2013b, para.2). Two documents (Frank, 2013b; NWIFC, 2012d), state that the new fish consumption rate should be “at least as *protective* as Oregon’s” 175 grams/day (Frank, 2013b, emphasis added). These two documents, released earlier in the water quality standards debate, differ in content from the third in speaking to protection in regards to the fish consumption rate. The third document (Keep Our Seafood Clean, n.d.) shifts the

emphasis to the cancer risk rate, but continues the theme of all people needing protection. It states that water quality standards are “supposed to *protect people* who need that *protection* the most” (Keep Our Seafood Clean, n.d., para.3). The name of the coalition itself is consistent with the message of protection, in stating that seafood should be protected and kept “clean.”

4) Valuating language. In addition to and in context with the above themes, valuating language is used to emphasize arguments regarding the need for more updated standards. Often used in concert with the theme of protection is the word adequate, stating that the current standards do not “*adequately* protect public health” (NWIFC, 2012d, p.2, emphasis added). In describing the fish consumption rate, the word *unjust* is also used to describe the effects of the low fish consumption rate, indicating that the current standards are unfair. Additionally, in discussing the proposed changes, the third article states “*even the state* Department of Ecology recognizes. . . the inaccurate rate” (Frank, 2013b, para.2, emphasis added), implying that for the State to recognize that fish consumption rate is inaccurate, then it must surely be so. When discussing those that argue against updating the water quality standards, they are referred to in one document as “*opponents*” that “*claim*” (Frank, 2013b, para.7, emphasis added) that the current standards are protective, emphasizing both that anyone who would raise the risk of cancer is an opponent and that their claims are invalid. Two of the three documents use inclusive “we” language to discuss and connect the issue with readers, such as “*we* should all be concerned” (Keep Our Seafood Clean, n.d., emphasis added, para.11) and “*we* should not face an increased risk of illness” (Frank, 2013b, emphasis added, para.3).

Conclusion

The road to higher water quality standards has been long, contentious, and political. Beginning first with EPA and the tribes encouraging Ecology to adopt a higher fish consumption rate that would translate into higher water quality standards, it quickly escalated into a public debate with intense behind-the-scenes Republican and industry lobbying of the Governor and Ecology to stop or delay the process. While the focus of the public debate and understanding of the issue has been on the fish consumption rate for many years, Governor Inslee's press conference and draft rule proposing a change in the State's cancer risk rate officially shifted the debate to also include other factors within the human health criteria as well.

AWB and the Keep Our Seafood Clean Coalition represent two dramatically different perspectives within this debate over Washington's water quality. AWB has focused on communicating to Ecology that they must incorporate and distinguish science from policy within the rulemaking, new water quality standards will bring significant and increased costs, and proposed standards could be impossible to meet. Keep Our Seafood Clean Coalition has focused on communicating to the public that the current fish consumption rate is inaccurate, that an update is needed to prevent pollution, and that all people need to be protected. In addition to their different messages and desired outcomes for the water quality standards, these two groups are interacting with and targeting different audiences. While AWB has released and targeted some documents to the public, they have been far more invested discussing this issue directly with Ecology. The tribes and environmental groups have also invested a significant amount of effort in communicating to Ecology through their official comment letters, but they have also

made a targeted and concerted effort through Keep Our Seafood Clean Coalition to educate the public on this issue and ask for their advocacy.

CHAPTER VI

FISH AND SHELLFISH INDUSTRY MEMBER KNOWLEDGE AND OPINIONS
TOWARDS WASHINGTON'S WATER QUALITY STANDARDS UPDATE

Introduction

I conducted 28 interviews from May to October 2014 with members of the fish and shellfish industries to ascertain a sample of the industry's views and opinions toward Washington's water quality standards rulemaking, the associated human health criteria, and the fish consumption rate. The seafood products that the subjects fished, grew, bought, or sold were widely diverse, including salmon, steelhead, sturgeon, bass, walleye, halibut, tuna, pacific and olympia oysters, mussels, crab, and manila, varnish, and geoduck clams. Below, I will examine the broad themes within these interviews (Appendix D) including demographics, how they came to be in the industry, their main priorities and issues, and then their knowledge of and opinions regarding the fish consumption rate and water quality standards update.

Subcategories and Demographics

I focused on recruiting and conducting interviews within the subcategories of the fish and shellfish industries of non-tribal shellfish growers (shellfish growers), non-tribal commercial fishermen and agencies (commercial fishermen), tribal seafood companies, seafood distributors and retailers (retailers), sports fishing organizations and guides (sports fishing guides), restaurants specializing in local seafood (restaurants), and organizations advancing local seafood businesses (organizations). I obtained a relatively equal distribution among these subcategories (Figure 8), with the exception of exceeding my original recruitment goal in shellfish growers and not meeting my research goal in

organizations. While not exhaustive, my focus within these subcategories was based on my desire to interview a broad range of those who market in fish and shellfish.

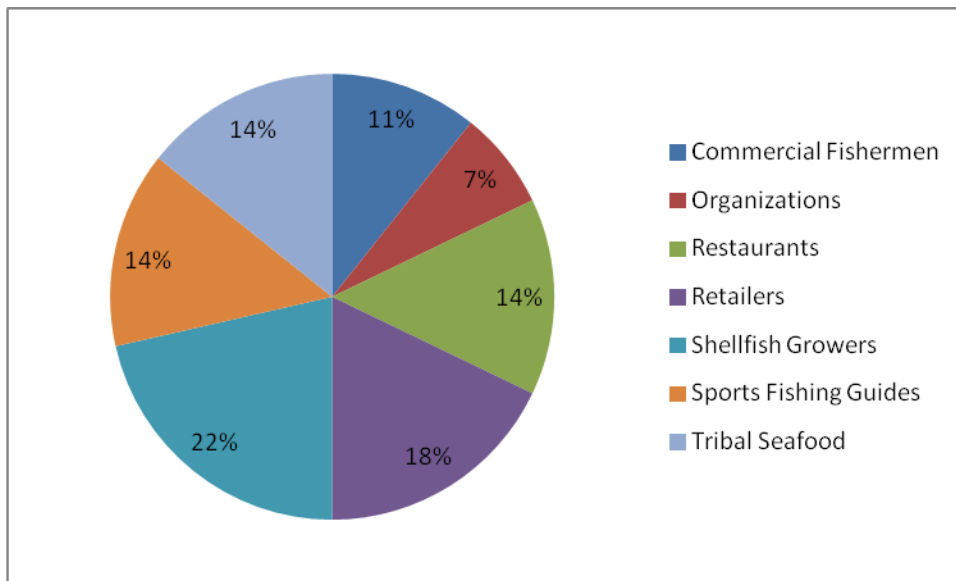


Figure 8. The distribution and percentages of fish and shellfish industry member interviews by subcategory.

I recruited within and conducted interviews in Western Washington, in six areas I have broadly demarcated as Coast, Columbia, Hood Canal/Straits, South Puget Sound, Mid Puget Sound, and North Puget Sound. The latter four categories are all technically situated within “Puget Sound,” but I felt the need to demarcate these broad subcategories within recruitment so as to obtain a relatively equally distributed sample from such a population-dense and economically and environmentally diverse geographical area. Puget Sound interviews were divided into six in the Hood Canal/Straits, seven in south Puget Sound, four in mid Puget Sound, and one in north Puget Sound. In re-grouping these geographical subcategories, I conducted two interviews with subjects on the Columbia, six interviews with subjects on the Coast, and the remaining 20 interviews with subjects in the Puget Sound. For the restaurants, retailers, shellfish growers, tribal seafood companies, and organizations, I used their growing grounds, offices, and stores location

to demarcate their geographic area. For the commercial fishermen and sports fishing guides, I assigned the geographical area based off of where they commercially fished most often.

The vast majority of the subjects were male at 77%, with the remaining female at 23%. While I conducted 28 interviews, two of these interviews had multiple subjects and thus I had a total of 30 subjects. The tribal seafood companies, commercial fishermen, and sports fishing guides that I interviewed were all male. The most gender diverse subcategories that I interviewed were the shellfish growers (33% female), restaurants that specialize in local seafood (50% female), and organizations that advance local seafood (50%) female).

In grouping the subjects into age brackets of 18-34 young adults, 35-50 young middle-aged adults, 51-64 middle-aged adults, and 65+ older adults, subjects were widely dispersed, with the most subjects (10) in the 51-64 year old bracket. The 35-50 bracket was a close second with nine, followed by the 18-34 bracket with seven, and finally the 65+ bracket with four subjects.

Overall, the demographic information reflects a concentration in male subjects located in the South or Hood Canal/Straits Puget Sound area that are between the ages of 35-64. This overall concentration is not surprising given the generally male-dominated nature of natural resources (Thompson & Armato, 2012), Washington's population concentration within the Puget Sound, and that I targeted subjects within management positions, which would generally correlate to subjects that had worked for at least a decade, but were before the general retirement age of 65. However, I am assuming that my concentrations within the Hood Canal/Straits and south Puget Sound areas of the

Puget Sound are due to my personal and work connections within those areas, rather than representative of any broader trend.

Why in Industry

One of the first questions I asked each subject was why or how they decided to be within the seafood industry. While there was a large range of backgrounds and reasons, the most common background was that they had “always fished,” “grew up with it,” or that they were the daughter or son of a commercial fisherman. For those who did not grow up fishing, selling, or farming fish or shellfish, most described either taking advantage of an opportunity, falling into the field and liking it, or wanting to grow something and be connected to their income in that way.

I modified this question for the tribal seafood companies, not generally asking why they were in the seafood industry as the tribes have been fishing and gathering seafood for millennia. I instead more often asked “why did the Tribe decide to incorporate in this way?” While all four tribal seafood companies varied in regards to their exact model, they all discussed that their main reason for operating was serving the tribal fishers and growers and providing them a market and good price for their product.

Major Issues, Priorities, and Customer Concerns

Before asking subjects their knowledge of and opinions toward the water quality standards update, I first asked about their major issues, priorities, and customer concerns in a section I labeled “broader seafood landscape.” In addition to recognizing that many subjects might not be knowledgeable of the fish consumption rate and water quality standards update and thus that portion of the interview might be incredibly short, I wanted to ascertain a baseline of their main priorities and issues and customer concerns to

contextualize their fish consumption rate and water quality opinions. Below, I detail the major issues, priorities, and customer concerns identified by subjects, as well as briefly discuss additional questions I asked specific subcategories, including if they were affected by shellfish bed closures, the recent Chinese ban of US shellfish, and whether restaurants took into account water quality in making their seafood purchases.

Major Issues and Priorities

The main issues and priorities identified by subjects included availability and/or seasonality; and permitting, regulations and management. In addition to these major themes, I also detail other broad issues and concerns identified and discuss subject views on shellfish bed closures.

Availability and/or seasonality. A major issue and priorities raised by many subjects was the availability and/or seasonality of the products that they caught, sold, or served. This theme was expressed in various ways generally depending on the subcategory and which side the subject was on in the demand/supply equation.

Many of the retailers and restaurants discussed concerns with obtaining or sourcing local seafood and many connected this to either freshness or the need to educate customers on this seasonality. Retailer 2 stated, “I always get customers coming in and they always want it fresh, nobody wants it frozen. But I have to tell them, sometimes it's just impossible to get it fresh, it's just not in season right now.” Two subjects discussed the difficulty in either obtaining or the rising price of Dungeness crab. Restaurant 3 discussed the shortage of oysters that their restaurant was recently seeing, saying that s/he was “taking what I can get.”

A shellfish grower, sports fishing guide, and multiple tribal seafood companies, all on the supply side of the equation, discussed a shortage of product or concern for low fish runs. Shellfish Grower 2 pointed to the previous lack of natural sets¹ in the Hood Canal/Straits area as a reason for lack of oysters, but was hopefully for the set that was occurring that summer. Tribal Seafood Company 1 stated that their top concern was that s/he did not have enough geoduck to meet the demand. Two tribal seafood companies and a sports fishing guide all discussed fish returns being a significant concern, with Sport Fishing Guide 1 stating their and their customers main concern was inconsistent fish runs, and Tribal Seafood 2 stating that this year's run was "disastrous for the Puget Sound, there have been no returns." Commercial Fisherman 3 brought demand and supply issues together in discussing problems with the current fisheries quota-based system that encourages fishermen to get their fish as quickly as possible. In catching fish quickly though, s/he states:

Restaurants don't want them all at once, they don't want the fish for one week and that's it. They want them throughout the season to get a nice steady supply, they can depend on it, we can depend on them. If you can't have that, you can't sell sustainable local seafood.

Permitting, regulations, and management. Many subjects, particularly within the shellfish growing and commercial fishing subcategories, discussed permitting, regulations, and/or the politics of management as a primary concern. Two commercial fishermen disagreed with specific influences over fisheries management or regulations. Commercial Fisherman 1 pointed to environmental groups and "big eco-trust money" as having too much influence over regulations, focused more on raising money for their pet

¹ A 'natural set' is one in which oysters naturally spawn in the summer months, attach to shells (that have generally been placed and suspended in the water by the oyster farmer), and then eventually grow into oysters (Peabody & Griffin, 2008).

projects than sustainable fisheries. Commercial Fisherman 2 stated that the entire fishery was politically and not biologically driven in terms of “who gets to harvest what, when, where and who has the political clout to say yay or nay” and that the “co-management system is kinda broken.” Sports Fishing Guide 1 spoke to management of the fish runs being a major issue, pointing to the “constant fighting between who gets the piece of the pie.”

Shellfish growers and Organization 1 were significantly focused on regulations and permitting of oysters and geoducks. Most subjects caveated their concern with regulation by stating that regulations were necessary for clean water, but that the current suite of regulations were complicated, extensive, and hampered their production.

Organization 1 connected permitting to not meeting the demand for product, stating that

the number one issue is permitting. We’ve had issues where we are nowhere meeting the demand for our shellfish. We don’t have hard numbers on how far we are from what the market demand is, but we know that many of our members have said that they could easily sell two or three times more than what they are producing.

While there are Federal Corps, State, and county regulations, Shellfish Grower 3 pointed to the local government shoreline rules as the most difficult to work with due to the individual people, the “shoreline rules nazis,” at the county that were not knowledgeable on what they were implementing.

Organizations 1, Shellfish Grower 3, Shellfish Grower 5 all described obtaining permits for new beaches as particularly onerous and expensive. The latter pointed to certain counties being more favorable to shellfish growers, stating that s/he were only expanding their shellfish operations in Mason County and that despite having the opportunity to lease in Thurston and Pierce County, “I’m turning people down because

it's not worth it to me." Shellfish Grower 3 discussed the co-management process with the tribes where the tribes need to survey a beach to assess if there are natural stocks on the property before a grower can begin operations. In referring to the implementation of the Rafeedie Decision, s/he stated,

The biggest problem with the tribal implementation order is that it's difficult to follow, it was poorly written. Both the settlement and the implementation order were poorly written, so there's too much to be interpreted by individuals and even though the lawyers say it's clear language, it's not clear language.

S/he went on to say that the larger problem was the tribes not having the resources to conduct the number of surveys needed for all the beaches that growers wanted to lease. S/he included that a nearby inter-tribal organization was working on standards to make the process easier though and the tribes were "doing better."

In addition to the above management politics and shellfish permitting, a sports fishing guide identified ever-changing Fish and Wildlife regulations as a major issue. A seafood retailer also discussed the worry that of increased Federal Drug Association regulations could require facility upgrades.

Other priorities and issues. A large range of other priorities and issues were identified by subjects. In addition to multiple subjects focused on farming and/or overall business operation concerns, some issues raised were specific to certain subcategories such as hatchery fish, and obtaining and selling local seafood.

Two of the sports fishing guides identified the health of hatchery fish, with one concerned with the survival of hatchery fish in Puget Sound and the other concerned with funding for hatcheries and fish production being reduced. Both discussed water quality, with the first speaking to population pressures and pollution rather than lack of hatchery

production being the most probable cause for reduced numbers of salmon and steelhead in Puget Sound. The second was more hatchery-production focused and discussed that poor infrastructure and water quality at hatcheries were reducing hatchery fish survival.

Not surprisingly, as I targeted restaurants that specialized in local seafood, all restaurants spoke to a priority in obtaining and selling local seafood. Two restaurants specifically spoke to focusing on obtaining seafood within 100 miles of their restaurant, with the other restaurants speaking to focusing on what was local and available in the Pacific Northwest. Restaurant 3 owned and operated two restaurants, the first of which only provided Pacific Northwest seafood and the second that provided domestic seafood. Additionally, while I recruited retailers more generally, rather than attempting to target those that specialized in selling local seafood, multiple retailers also discussed obtaining local seafood as important.

Shellfish bed closures. While this topic was often brought up before and after asking after it, I included a specific question asking shellfish growers, retailers, and restaurants if and how often they had been affected by shellfish bed closures. It should be noted that I conducted many of my interviews during the summer months, which is the prime season for increased vibrio and biotoxin² contamination in oysters. Overall, all of

² *Vibrio (Vibrio parahaemolyticus)* is a naturally occurring bacteria that multiplies in warm water and can live in raw oysters, but can be killed through cooking. If oysters are contaminated and eaten raw, they can cause sickness and gastrointestinal stress. Health regulates the shellfish industry wherein they close growing areas when there have been four cases of vibrio illness within a period of 30 days or when there are high vibrio levels (Health, 2013). Biotoxins are an algae-produced poison. While the algae are naturally occurring, increased nutrients in the water and warm temperatures can cause them to ‘bloom’ and become harmful to humans. Unlike vibrio, biotoxins cannot be killed via cooking. Health also monitors and regulates for biotoxins, closing beaches when detected at dangerous levels (Washington State Department of Health, WDOH, n.d.a).

the shellfish growers and many of the restaurants discussed this as an issue, with many of the retailers less affected.

Shellfish growers. The type of shellfish bed closures growers discussed generally varied depending on the type of shellfish they grew, with geoduck growers almost exclusively discussing the biotoxin paralytic shellfish poisoning (PSP), and the rest of the shellfish growers and tribal seafood companies often discussing vibrio and fecal coliform contamination. Shellfish Grower 1 and Tribal Company 3, both geoduck growers, reported regularly monitoring for PSP. Tribal Company 3 reported being shut down for nine months due to PSP contamination and discussed that PSP concentrates only in the gut and skin of the geoduck, leaving the mussel and flesh clear. Shellfish Grower 5, also a geoduck grower, and Shellfish Grower 4, a mussel grower, both discussed PSP being a risk, but that it was rare for their south Puget Sound areas and a more common issue in the north Hood Canal.

Vibrio was repeatedly raised as a regular concern by many shellfish growers and a tribal seafood company. In discussing the huge importance of the issue to the shellfish community, Shellfish Grower 6 remarked that s/he had “never seen less than half the agenda committed to VP” at the large Interstate Shellfish Sanitation Conference (ISSC). Shellfish Grower 2 stated that it was a major issue each summer and vibrio levels that particular summer were incredibly high causing shutdowns in almost all growing areas. Shellfish Grower 3 remarked that while vibrio could not be controlled, it could be managed to ensure that their customers did not get sick. Both Shellfish Grower 3 and 6 discussed being involved in vibrio rulemaking committees with Shellfish Grower 6 explaining how the shellfish industry wanted Washington to move to a more proactive

risk-based rather than the reactive system that uses illness as an indicator. S/he were a proponent of harvesting oysters directly from the water due to lower vibrio levels and that the oysters were already filtered. "As an industry, you know, the last thing you want to do make people sick. It's not really good for business, usually." S/he went on to say that their company and the State had increased their testing, but that as the State is "always strapped," it was difficult for them to find the money to conduct extra testing. Vibrio was not generally mentioned as a concern by the geoduck growers. Shellfish Grower 1 stated that the ISSC excluded geoduck from their specific vibrio rules as there had never been a documented case of vibrio within the product.

Two shellfish growers discussed fecal coliform-related shutdowns. Shellfish Grower 4 remarked that their area never used to close, but it did now at least once a season due to heavy rains, which I have found is generally code for fecal contamination. Shellfish Grower 6 discussed the significant amount of fecal that exists within wood pulp naturally and stated that there was a closure due a treatment failure at a Weyerhaeuser plant three or four years prior.

Restaurants. Restaurant 1 described shellfish closures as their major issue at the moment as s/he had just been notified that their restaurant would need to source oysters elsewhere due to high temperatures and vibrio concerns. Restaurants 2 and 4 discussed being affected by red tides, with the former not selling raw oysters at that time due to a red tide at a local beach and the latter remarking that their growers were very responsible and often sourced other product for them when it occurred. Restaurant 3 discussed vibrio in depth, stating that s/he had considered taking raw oysters off the menu that summer, but was convinced by their shellfish supplier that there was a new standard in place that

would prevent illnesses. S/he said that the summer went great with no illnesses, but that a customer had just been sick at the end of September from eating a raw oyster at happy hour. S/he stated that answering questions from the Washington State Department of Health (Health) “rattles” him/her and that s/he buys their oysters from a specific supplier because “he requires that all his growers provide documentation that they have water quality standards checked that year. . . So, I know that the oysters that are going to have the highest water quality to be raised in.” S/he later went on to say that s/he would support a city-wide ban on oysters in July and August and/or when water temperatures were too high. S/he noted that this would not be fair to the oyster growers though and that ideally oyster growers would be compensated when this occurred. Two other retailers answered that they were rarely affected by shellfish bed closures.

Retailers. The retailers, in comparison to the restaurants and obviously the growers, generally reported being less affected by shellfish bed closures. Retailer 1 described shellfish closures as the biggest effect on their supply, but Retailers 2 and 5 stated that closures rarely affected them. Retailer 2 discussed the occasional red tide in the area or heavy rains causing septic tanks to overflow and affect northern sound shellfish grounds s/he bought from, but that their store had multiple shellfish vendors from which they could choose. Retailer 5 also stated that s/he was not often affected, attributing the lack of issues to being on located on the coast where s/he felt as though, due to the increased ocean flushing, there were not as many issues as there were within Puget Sound.

Customer Concerns and Questions

In regards to main customer concerns and questions, the most often mentioned issues were fresh and local, and whether the product was available and/or safe to eat. Additional customer concern themes of note that I will also discuss below are sustainability and Fukushima.

Fresh and local. Most subjects did not speak about freshness in any depth outside it being a top customer concern. However, some spoke about freshness in the same breath as either local or sustainable stating that customers wanted to know “how local, how fresh” (Retailer 4). One issue that Tribal Seafood 2 discussed in regards to freshness was educating customers that, while a customer can buy fresh farmed fish year anytime throughout the year, “we're starting to see that people understand that you can slack or thaw a fresh frozen Chinook and it's going to be 100 times tastier and better for you than fresh farm raised salmon.” The issue of local was discussed by subjects more in depth, with many stating that customers came to them specifically for local seafood and/or were willing to pay a higher price for local seafood. Restaurant 1 discussed how their customers wanted local and that if the chef was not able to obtain local seafood, then their restaurant would not sell it. S/he went on to state that “they don’t mind paying the extra for being local and being fresh.” Commercial Fisherman 1 also mentioned that their customers were willing to pay more for their fish, stating “The local, local really helps in the Puget Sound area, mostly shellfish and for this fish. So, at [high end Seattle restaurant], a wait person can talk about this product and where it comes from and that helps.” Retailer 1 stated that “local is huge” and that carrying local seafood and other local food is what brought the customers to his retail store.

Availability and/or safe to eat. In addition to freshness and local, multiple subjects stated that customer concerns and questions included asking whether specific fish or shellfish were available and/or safe to eat. Availability was sometimes mentioned on its own in regards to customer asking whether there was enough fish to catch, there was a large enough supply to sell, or educating customers regarding seasonality of local seafood. However, availability was also spoken about in connection with oyster safety. Multiple oyster growers discussed customer questions regarding “red tide” or water quality in order to ensure that they would not get sick from eating oysters. Shellfish Grower 2 spoke to how s/he often needed to educate customers that their area was not affected by red tide. Conversely, Restaurant 2 discussed needing to talk with and educate customers about why their restaurant was choosing to not carry raw oysters due to red tide concerns on the coast.

Sustainability. Three Puget Sound subjects, Restaurant 4, Retailer 2, and Tribal Seafood Company 1, spoke specifically to more highly concerned and educated customers that were focused on sustainability and/or wild over farmed fish. Restaurant 4 said that their customers “go through the phases of gluten or omega 3s, whatever might be the hot button. They’re very in tune with the news.” S/he went on to state that their restaurant's customers would inform the staff of the issues of which they cared most. Retailer 2 discussed how s/he saw the Pacific Northwest region, as a whole, as more sensitive to sustainability, focused on wild over farmed fish, and more apt to ask questions, stating “it’s not bad, it's just you have the answers and you have to make sure you're playing by the rules that they want you to play by, otherwise they'll boycott your

store.” Tribal Seafood 2 also stated that customers were very concerned with farmed vs. wild fish and that this was a “go-to” issue for her/him to discuss with customers.

On the flip side of this, another Puget Sound subject, Restaurant 3, discussed that while s/he was very concerned with sustainability, did not sell farm-raised salmon, and included information on the Monterey Bay Aquarium Seafood Watch within the restaurant's menus, “for the most part, Joe consumer doesn't even understand. . . most people who walk in the door don't know the difference between wild salmon and farm raised salmon. . .” Part of what may account for the differences between these subjects’ differing customer experiences is geographical location or origin of their average customer, as discussed above by Retailer 2. Restaurant 4 and Retailer 2 discussed their average customer as originating from the specific neighborhood in which they were situated in the Puget Sound and Tribal Seafood 2 stated that their biggest market was in the Northwest. Restaurant 3 though stated that the majority of their restaurant's customers were tourists and business travelers from the nearby hotels and convention center.

Fukushima. The majority of the customer concerns and questions were spoken of neutrally or positively by the subjects, with some stating that the concerns of their customers were the same or similar to their own. Commercial Fisherman 1, for example, in discussing that their customers wanted a high quality product and were willing to pay a high price for that quality, spoke to how high quality was then their top concern. However, the main outliers to this theme were customer concerns regarding potential effects from the Japanese Fukushima nuclear reactor accident that occurred in 2011³.

³ In 2011, there was 9.0 earthquake in Japan that triggered a massive tsunami that damaged the Fukushima Daiichi nuclear plant, resulting in a meltdown of three nuclear reactors. This meltdown released nuclear pollution into the air and Pacific Ocean that is currently being monitored for impacts to the arctic and west coast (Fukushima Inform, n.d.).

Three subjects, two commercial fishermen and one shellfish grower, discussed this as a customer concern, but spoke of it with incredulity and/or that they had to educate their consumer that radiation was not an issue for their fish or oysters. Commercial Fisherman 3 stated that s/he lost one client due to Fukushima worries who “refused to buy salmon, and he had a PhD in veterinary science. He should have known better that we tested, the Canadians are testing, that it’s not showing up here.” Commercial Fisherman 3 also discussed similar customers concerns regarding high mercury levels in tuna and how s/he had been able to supply customers with reports discussing how mercury was not an issue in their albacore tuna. However, s/he stated that, despite supplying them with technical reports, her/his customers did not always believe the information.

Chinese Ban of US shellfish

Due to it being a topical issue and one focused on toxicity of shellfish, I asked shellfish growers, organizations, and tribal seafood companies if they were affected by the recent Chinese ban of US shellfish. In winter 2014 to spring 2015, there was five month long Chinese ban of US shellfish due to high levels of arsenic and paralytic shellfish poisoning (PSP) detected in Puget Sound and Alaska geoduck, a prized and highly valuable export to China (China, 2014). Chinese officials found that the Alaskan geoduck contained PSP and the Washington Puget Sound geoduck, originating in Poverty Bay, tested above China’s standards for arsenic. There were US questions regarding how (wet vs. dry) and which parts (skin or other portions of the animal) that China tested, as well as concerns that the ban was more political than scientific (Moore, 2014). However, due to the geoduck’s \$68 million yearly US export to China, the majority of which originates in Washington State, US officials flew to China in March to discuss how to lift

the ban. The end of the ban included US implementing new methods for monitoring and sampling inorganic arsenic (China, 2014).

The majority of shellfish growers, organizations, and tribal seafood companies were not directly affected by the China ban, citing that they either did not market in geoduck or that they were not marketing geoduck to China at that time. However two subjects, Shellfish Grower 1 and Tribal Seafood Company 3, were directly affected by the Chinese ban as they both marketed almost exclusively in geoduck to China or the “far east.” Shellfish Grower 1 did not remark on the issue extensively, stating that s/he did not think “it would be relevant.” S/he did briefly discuss that Health tests were coming back showing that inorganic arsenic may be an issue in extremely old geoduck. Tribal Seafood Company 3 spoke more extensively of the ban, remarking on how unique and unprecedented a situation it was for the industry. Their company felt pressure from their buyers to continue to sell, but s/he debated what to do as s/he concerned with angering the Chinese government. However, “the state started selling and we go, heck with that.” The company then began selling to their distributors again, but only after making each one of them sign an affidavit agreeing they would not sell to mainland China. Overall, their company was only “down” for two weeks, but s/he reported that, after that time, demand was lower as there was more risk for their distributors (in presumably smuggling the product into China). S/he noted that while NOAA stopped issuing international certifications for shipping to China, Washington (Health) never stopped issuing permits. Overall, s/he seemed content with the issue, seeing it as one that worked out well and relatively quickly. In being largely resolved in seven months, s/he stated, “in dealing with China that’s lightning fast. . . so, I think they did a pretty good job in turning it around.”

While the majority of the other subjects were not directly affected by the ban, many were either involved in boards that discussed the issue, knew colleagues that have been affected, or speculated on the effects of the ban. Shellfish Grower 3 stated that the ban, while including all shellfish, only really affected geoduck due to the wide array of markets available, and that much of the geoduck could instead be sold to Vietnam, Taiwan, and Hong Kong. Tribal Seafood Company 1 echoed the former in stating that their sales were not affected, despite one of their distributors not purchasing oysters from their company as the distributor could no longer export them to China. S/he was not concerned with this distributor though, stating that the demand for oysters was such that anyone would buy them. S/he went on to say, “it didn’t really affect anybody, just so you know. Because most people have such a limited supply. Instead of selling it in three months, it might have taken them six.”

Other subjects mentioned the increased arsenic testing that was being discussed and implemented. Organization 1 stated that s/he was learning that there was a difference in how components accumulate between wild and farmed geoduck, potentially due to their age in being exposed for a longer period of time, and/or a difference in growing/substrate location. S/he stated that the average age for a farmed geoduck is five to seven years, while the average age for a wild geoduck is over 20 years old. Shellfish Grower 3 remarked that there were many wild geoducks that, due to their age, would not pass the stricter arsenic rules. S/he lamented this in discussing how “most or all [arsenic] would pass if you eliminate the skin and gut. They say they [the Chinese] eat 100% of it, it’s hard for me to believe that they eat the skin.” When I responded that I had been told

that some Chinese dry and grind up the skin to use as a soup thickener, s/he stated, “oh, okay, they shouldn’t do that, there’s arsenic in there.”

Water Quality as a Concern for Purchasing?

A unique question that I asked of the restaurants that specialized in local seafood was whether water quality was a concern or a consideration in purchasing their seafood. All four restaurants replied in the affirmative, but each provided different contexts and referred to different concerns in regards to what constituted water quality. Restaurant 1 discussed water quality in regards to affecting the taste and texture of seafood, Restaurant 2 discussed not carrying certain seafood products due to unsustainable fisheries, Restaurant 3 pointed to oysters specifically and being incredibly judicious in where and what time of year their restaurant obtained their oysters, and Restaurant 4 did not discuss the particulars other than stating water quality was considered.

Knowledge of and Opinions toward Fish Consumption Rate and Water Quality

Standards Update

After broadly asking after and discussing major issues and priorities, I then discussed the subjects’ knowledge of and views toward the fish consumption rate and water quality standards update. Below, I provide a general analysis of knowledge of the update by age group, subcategory, and gender, the opinions of the more stratified subjects, and then more broadly discuss the major themes that were prevalent throughout the interviews.

Knowledge of Fish Consumption Rate and Water Quality Standards Update

As a baseline and before delving into each subject’s views toward the fish consumption rate and water quality standards update, I first asked if the subject knew

about this update, how they knew about it, and then what their source had conveyed about the update.

Knowledge of issue. Of the 30 subjects I interviewed, a little more than half (60%) had at least some knowledge of the fish consumption rate and water quality standards update. However, due to the disparate level of knowledge within this category, I felt the need to parse the knowledge base out into three broad categories of: 1) no knowledge of the issue whatsoever; 2) some knowledge in which the subject had heard about the issue but had no in-depth knowledge; and 3) a clear knowledge of the issue. Using these broad categories, 12 subjects stated they did not know about this issue, eight were somewhat knowledgeable or had heard about the issue, and 10 were knowledgeable of the fish consumption rate and water quality standards update.

In further analyzing the data by these broad three categories (Figure 9), I found that the age groups of my subjects that were most knowledgeable of this issue were in the 51-64 and 65+ age range, with 18-34 being the least knowledgeable, followed by the 35-

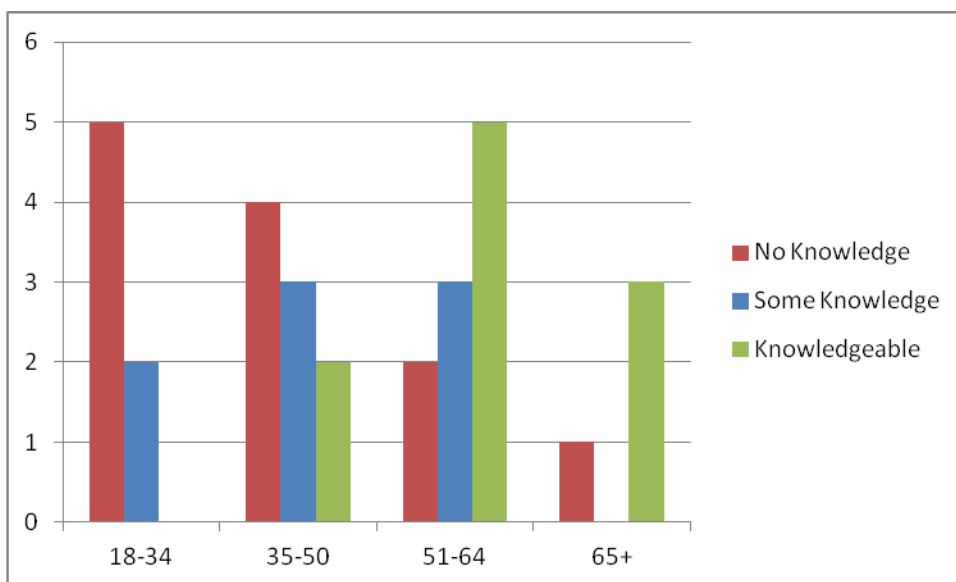


Figure 9. The knowledge base of the fish consumption rate and water quality standards update by age group.

50 age range. No subjects within the 18-34 range had in-depth knowledge and only two professed some knowledge of the issue.

I also analyzed general knowledge of this issue by subcategory (Figure 10) and gender (Figure 11). All subjects within the commercial fishermen and organizations had knowledge of the issue, and all tribal seafood companies and the majority (~67%) of the shellfish growers were either knowledgeable or had some knowledge of the issue. The subcategories with the least knowledge of this issue were retailers and restaurants, with neither subcategory professing to be knowledgeable about the issue. Half of the sports fishing guides had no knowledge of the issue. However, there was significant overlap within the commercial fishermen subcategory and older age groups and another overlap between restaurants and the younger age groups, with almost all subjects were in the 18-34 and 35-50 range. Within these two groups then, I would not be able to say whether their knowledge base was more correlated to their age or due to their profession.

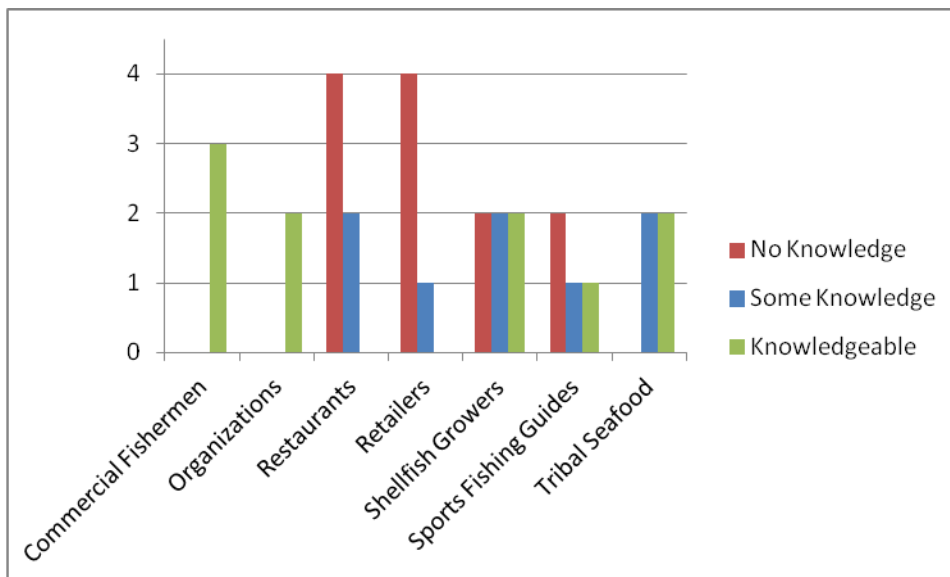


Figure 10. The knowledge base of the fish consumption rate and water quality standards update by subcategory.

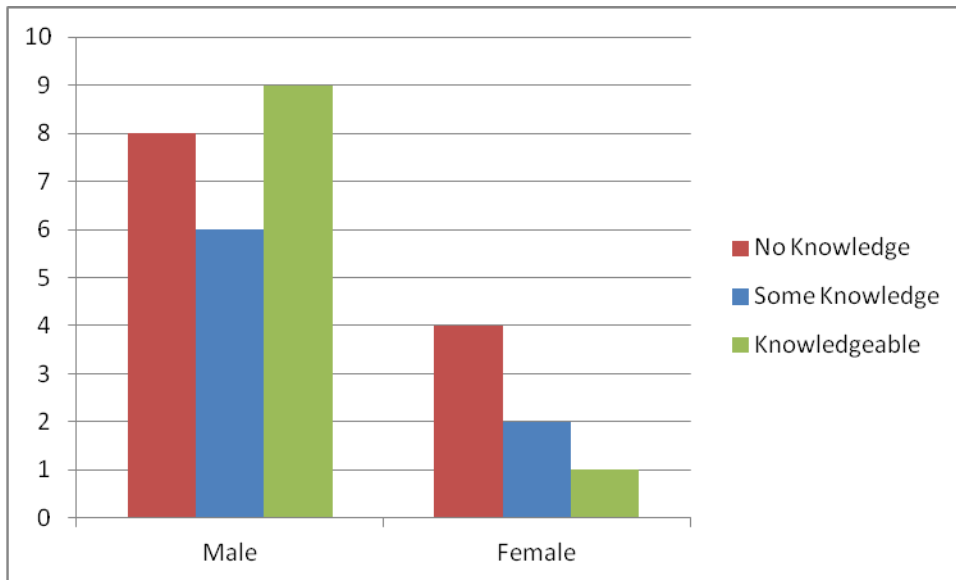


Figure 11. The knowledge base of the fish consumption rate and water quality standards update by gender.

There was an approximately 20% difference in knowledge base between genders, with ~65% of the male and ~43% of female subjects stating they had either some or extensive knowledge of the issue.

How subjects were informed. Overall, of the subjects that were knowledgeable about or aware of the increased fish consumption rate and water quality standards update and remembered where they had heard about it, many reported first hearing about the update on the news or in the newspaper. The majority of the tribal seafood companies and one shellfish grower recalled first hearing about the update via their tribes or through an inter-tribal organization. Other ways that subjects were informed of the issue were from the consumer side or customers, through a shellfish organization, and one commercial fisherman reported first learning about the update through a combination of the Health, Ecology, Puget Sound Partnership, and the press.

Information provided when informed. Similar to how they were informed of the issue, some subjects were not able to recall what the document or person said about

the update. However, a few subjects referred to hearing information about raising the fish consumption rate specifically. Shellfish Grower 3, for example, first learned about the issue through the Northwest Indian Fisheries Commission fish consumption rate calculator.

Two subjects discussed industry when recalling the content of what the person or information said about the update. Commercial Fisherman 3, in being asked how s/he heard about the issue, stated that s/he had “been watching the paper, I know that Boeing isn’t happy.” Organization 1 discussed industry as a secondary issue and concern, with shellfish industry fears as the first reaction. After being asked how the issue was first framed to the subject and her/his initial thoughts, s/he stated, “Hysteria. No one will want to eat our shellfish because the information is showing that it is not healthy to eat” and then “Oh my God, it’s an attack on shellfish or on fish from our waters.” S/he went on to state that this turned to realizing that industry was pushing back on updating the water quality standards as they said they would be incredibly difficult to meet.

Opinions toward Fish Consumption Rate and Water Quality Standards Update

The fish and shellfish industry members held widely diverse opinions and views toward the fish consumption rate and water quality standards, as sampled during the summer and fall of 2014. This was a dynamic time period within the water quality standards update as Governor Inslee conducted a press conference in early July where he unveiled his new plan to raise the fish consumption rate, increase the cancer risk rate, and couple the rulemaking with a toxics reduction package within the legislature. Due to these changes, my general background description of the water quality standards update changed from that point on to encompass this press conference and change in cancer risk

rate. While I conducted a significant amount of recruitment before that time, I conducted the vast majority of my interviews after that date (26 out of 28 interviews). As such, the majority of my interviewees, with the exception of Shellfish Grower 1 and Restaurant 1, were provided a background inclusive of both the proposed fish consumption rate and cancer risk rate changes.

Below, I first discuss the major themes that were prevalent throughout the interviews regarding the update, and then whether subjects believed that there was a need for higher water quality standards.

Prominent themes. Subject prominent themes included varying discussions and views toward the fish consumption rate, the cancer risk rate, compromise and balance, other priorities, costs to industry, more testing or information, and concerns for different regions and species.

Fish consumption rate. In providing a background on the fish consumption rate, I anticipated and also found that grams per day was not easily conceptualized by or translated to subjects. I increasingly began to describe the current 6.5 grams/day and proposed 175 grams/day using hand gestures to indicate approximate size, seafood proxy and/or ounces. For the 6.5 grams/day, I would often describe it as a half an oyster and for the 175 grams/day, as it more easily translated into ounces, I would often describe it as approximately 6 ounces. Of the subjects that discussed their specific views of the fish consumption rate, there was a spectrum of views ranging from those who saw the current fish consumption rate as unjust or antiquated, were surprised or incredulous that there were people who ate 175 grams/day, had questions regarding a Washington average, how imported seafood figured into the issue, and public perceptions.

6.5 grams/day as antiquated. Four subjects discussed the current 6.5 grams/day fish consumption rate in the negative, viewing it as antiquated, too low, or an injustice. Tribal Seafood 4 discussed the current fish consumption rate as industry-driven and “ridiculously low, it’s not even close to what reality is.” Shellfish Grower 5 argued that “our fish consumption rate is antiquated and what I do know is that it feeds into the NPDES permits and that’s totally ass backwards.” S/he commented on the current system of polluting Puget Sound as being at odds with and counterintuitive to the large efforts and funding to manage and support fisheries and restore habitat. S/he spoke to fear for future generations and disparate effects on specific groups, stating,

There’s no special tradition, there’s no special culture for me that links me to this thing, it’s my choice. . . I can go to the grocery store and get my seafood. . . but I choose not to. Other people don’t have the same choice that I do. And that’s the communities that really feel the effect of this.

Retailer 5 also expressed concern for tribes in commenting that 6.5 grams/day may be more than the average person eats, but that the average “doesn’t help them,” and that the standards should be based more on the upper bound, but not extreme, limits. Restaurant 4’s two subjects continued in this vein, but focused injustice more broadly musing, “what a huge injustice that’s been going on for so long to really believe that people have been eating half an oyster a day” and the second subject remarking with a laugh, “I need to cut back.”

Surprise at 175 grams/day. A common reaction by six of the subjects was surprise or incredulity expressed toward anyone eating 175 grams of seafood a day. Many of these subjects remarked that they or their family didn’t eat that amount of fish or shellfish day. Shellfish Grower 2 stated, “I don’t know, I mean we don’t eat this much seafood every day, that’s for sure” and Commercial Fisherman 2 stated, “I don’t think anyone eats a

meal a day. I don't eat a meal of seafood or fish, do you?" Commercial Fisherman 1 continued in this vein, stating, "and that's every day? I just can't image that people do that. . . but maybe the tribes do."

Restaurant 4 and Organization 1 remarked on unfairness or severity of the 175 grams, respectively. Organization 1 stated that going from the current standard to 175 grams/day seemed severe and that extrapolating for one group "seems a little harsh." Shellfish Grower 4, in being told that the 175 grams/day was based off of mainly tribal fish consumption surveys, stated, "I could see how that wouldn't be fair because a lot of people that don't come close to eating that much."

Washington average? Often in connection with the surprise exhibited toward 175 grams/day, a number of subjects either asked if there was a Washington average for fish consumption or said that they would be interested in seeing a Washington average. One subject stated, "how close to reality is the 175 grams a day?" Another subject recommended that a state-wide survey for Western Washington fish and shellfish buyers would be interesting, suggesting that it would probably be a high number. Related to this question or suggestion for using a Washington average, two subjects discussed and asked questions regarding how policies are set regarding risk, wondering if standards are or if they should be set for one group. Shellfish Grower 1 stated, "So, you got to wonder, if you're writing the standards, you know, how small a group can you go?" S/he went on to make a direct parallel with the Chinese ban on shellfish, discussing that tribes are asking for standards to be set for them similar to the how the Chinese are asking for US standards are arsenic should be set for if "one person eats the skin off of geoduck." Organization 1 discussed a similar concern in stating,

I know they want to hit the highest consumption population. I guess that's what they do. But I don't know how many other considerations are actually. . . written that way, [how many] policies and laws are really for those highest risk populations. I don't know.

Imported seafood. Three subjects asked whether the fish consumption rate included non-Washington seafood or remarked on the amount of seafood Washington currently imports. Commercial Fisherman 1 and Organization 1 discussed the large number of seafood imports and the seafood trade deficit, respectively. Organization 1 stated,

I guess one of the things that stood out to me in the beginning is, how do we know that the fish we're eating is really the fish that is swimming in the Puget Sound. I know that for the tribes, that makes a lot of sense, but we hear all the time that we have this 80 billion dollar seafood trade deficit.

Shellfish Grower 2 brought up similar points discussing how s/he bought fish from a large distributor, was unclear of how much fish the distributor sold from out of the State, and what the standards were within those states, asking “are we really solving the problem for people living in Washington or not?”

Public perception. Multiple subjects discussed the effect of the fish consumption rate and/or the broader water quality standards update on public perception of seafood, with the majority worried for negative effects on the seafood industry.

Two retailers expressed worry that this issue would affect the demand for seafood. Retailer 5 drew a parallel with the negative press that mercury levels in tuna had received, stating s/he may have lost sales due to public concern, despite the fact that the tuna was a high quality healthy protein and that additional testing showed that mercury was not a concern for their particular tuna. S/he stated, “one potential worry would be is, at some point, directly or indirectly, people in general or pregnant mothers or whatever

are told to eat less fish because of all this stuff that's happening, which I think would be counterproductive because fish is really good for you.” Retailer 4 more briefly spoke to this concern, discussing that seafood demand and price were a concern to her/him as a business owner. Two subjects, a shellfish grower and organization, spoke to working with Ecology early in the water quality standards update process. Shellfish Grower 3 stated that their biggest concern in the beginning was not the standard itself, but that Ecology did not provide a message to the public that their shellfish was toxic. “It’s like, no, this is the cleanest water in the country, we’re simply going to ensure that it stays clean with new standards that are higher.”

Two subjects, an organization and a retailer, discussed the change in fish consumption rate in regards to public perception more positively. Retailer 2 discussed a raise in the fish consumption rate as positive in being able to “honestly look our customers in the eye” to tell them that the 6 or 8 ounce servings s/he sold as portions in the store were consistent with or under the standards for water quality. Organization 2 pointed to the current news cycle discussing the fish consumption rate as a “yo-yo,” with restaurants asking when the back and forth was going to stop. The organization felt as though the current news reporting a higher fish consumption rate was promoting or had “white hatted” people eating fish again.

Cancer risk rate. In describing the cancer risk rate, I did so in concert with the other portions of the water quality standards criteria, including body weight, bioaccumulation, and drinking water intake. An important note is that, after discussing or writing down the basic equation for subjects to view and discuss, I would often describe the cancer risk rate as effectively moving the decimal point within the fish consumption

rate wherein the 175 grams/day fish consumption rate could be considered 17.5 grams/day. I did so and felt comfortable doing so as this was included within EPA's guidance in discussing how to interpret the cancer risk rate. Similar to the fish consumption rate, there was a wide spectrum of opinions toward the cancer risk rate. Fewer subjects spoke about the cancer risk rate or mentioned it in any depth as compared to the fish consumption rate, but those who did discussed it in terms of an empty change, how the public would understand it, and/or the policy conversations regarding it.

Empty change. Multiple subjects either discussed the cancer risk rate change as dilution or a shell game in regards to affecting the increased fish consumption rate and overall water quality standards. In speaking to both the increased cancer and body weight changes, Tribal Seafood 1 stated, "the governor's diluting it by increasing it. It's about dilution. That just kills me." Shellfish Grower 2 stated that if the body weight and cancer risk rates were changed, then the fish consumption rate increases were "kind of like an empty change." Retailer 5 discussed that the change from one in a million to one in a hundred thousand "seems like a cop out, from the way that you've described it. This kind of fiddling with the numbers and not changing anything." Organization 1, after additional discussion of the cancer risk rate, remarked that "it seems like it's a shell game" and asked if the 175 grams/day was just to placate the tribes.

Public perception. Two retailers remarked that the public or "most people" do not do the math or conceptualize risk well. Retailer 2 stated, "I don't know about dropping it to one in a hundred thousand, I guess as you say, it's moving the decimal point over, which is tricky. Most people don't do the math on that anyway. . ." S/he went on to

concentrate on the potentially positive public reaction to the higher fish consumption rate.

Retailer 3, an engineer, spoke of the change more negatively in stating that

I deal a lot in statistics and people don't grasp long odds very well. The difference in a hundred thousand and a million is. . . when you get to the one in a million rate, you can find almost anything bad happening to people.

S/he went on to state that there was a significant difference between the two rates and that his initial take on the subject was that one in a hundred thousand was not reasonable. S/he pointed to public misperception regarding the odds of different risks affecting children and stated, "in perspective, we're talking about saying we're going to pollute enough to say that your odds are ten times of your child dying of cancer than getting abducted."

Policy discussions. In addition to the general views expressed above toward the cancer risk rate, a subject I interviewed was directly involved in Ecology's delegate's table. Shellfish Grower 3 discussed Ecology holding multiple meetings to extensively discuss each of the water quality factors where s/he realized that "you could move any one of these elements up and down and end up with a different result, so that's where it got pretty complicated." In recalling the meetings in which the cancer risk rate was discussed, the subject stated,

The cancer rate, I don't recall that was one of those things that we discussed at length, but then in the last meeting, Ecology says well, we think we're going to go with one in a hundred thousand. And it's like, okay, where did that come from? We're not going to talk further about it?

S/he expressed disappointment over not being able to review additional scenarios and discuss the end result to analyze whether the standard would be achievable. S/he mentioned knowing about a separate committee that Governor Inslee had created to advise him and believed that the Governor ultimately decided to make an "executive

order,” rather than listen to the delegate’s table. I interviewed this subject soon after the Governor press conference where he unveiled his draft rule and, in reference to this press conference, s/he stated that “to me, it feels like our feet got kicked out from under us as we never even saw any proposed rules yet.”

Compromise and balance. A common theme within many of the subjects was remarking that a compromise or balance was needed, or expressing sympathy for Ecology or the Governor. Multiple subjects discussed the need for realistic goals or legislation that could be passed and others stated there was a balance or compromise to be made. Retailer 1 and Shellfish Grower 4 both discussed the need for realistic goals, with the former stating that “I don’t think we should just hand them everything on a platter, but maybe something that gives them a period of time to improve.” Sports Fishing Guide 3 spoke to the dilemma of higher costs stating “we want everything to be inexpensive, but yet we can clean water. It’s a tough balance.” Shellfish Grower 5 stated, “I mean I get the governor’s predicament, Washington is not the friendliest place to do business and he wants to make it friendly for our big businesses, but at the same time Ohio doesn’t have Puget Sound to protect. We do.”

Almost all of the tribal seafood companies discussed a need for compromise or balance. Tribal Seafood 3 stated that business needed to be involved in the discussion and that “it needs to be a collaborative thing. And that takes leadership from the politicians and that ain’t happening, obviously.” Tribal Seafood 1 expressed sympathy for industries that could be affected, stating,

It’s a bit frustrating and even scary to some folks to think that their, I’m not going to take it to this extreme as I’ll start sounding like them, but it could affect their livelihood. And so, everybody does need to work together to try to figure out the best balance, that’s for damn sure.

Tribal Seafood 4 emphasized that this was a difficult situation for the Governor in balancing the needs of the industries and economy with public health, stating “there’s a balance that has to be made. . . it’s a tough decision and that’s why he’s elected governor, no one said it’s going to be a easy job.”

Costs to industry. Subjects often expressed concern for costs to industry, the overall economy, and/or losing jobs. Other subjects, while less frequent and mainly concentrated within the tribal seafood companies, discussed the need for industries to pay for pollution.

Sports Fishing Guide 3 remarked:

It's interesting to see what would happen to big business when this happens. Does Boeing leave, because of costs? Does Weyerhaeuser, do they continue to leave the state because it's so tough to do business? It's interesting. Wow. It's a big deal, actually.

Shellfish Grower pointed to high costs that will potentially be borne by not only industry, but the public in stating “I don't want to see our economy crushed because we've done something that the dischargers can't work with. I mean, it's more than just a Boeing, it's the public. . .”

Multiple subjects discussed the dilemma in being a businessman and/or in the seafood industry with sympathy or concern for higher costs. Commercial Fisherman 2 was adamant about environmental groups and regulations not pushing industry overseas, stating that s/he had “always considered myself a statesman rather than someone who’s just parochial for what they do. Some people are, no matter what, well if it’s against fishing, then I’m against it. Well, I’m against it too, IF there’s justification for it.” Commercial Fisherman 1 stated, “intuitively, as a fisherman, I'd like to see it [higher

water quality standards], but I also feel there are industries that employ people and we don't want to lose them, per say.” Retailer 4 expressed a similar opinion in stating that s/he understood both sides of the issue where s/he wanted healthy shellfish, “but I understand that it’s also unrealistic to have pristine water where we want businesses to go do what they need to do.” Restaurant 3 expressed the dilemma s/he was feeling in regards to being both a businessman, but also highly concerned for water quality, stating

As a catch and release steelhead fly fisherman, I want the highest and most stringent clean water standards on earth, on the planet. As a purveyor of wild seafood, double. I want the highest quality water that science can yield. . . But on the other hand, as a business man and I'm pragmatic and realistic, I understand that these things are going to be very expensive and you know, industry as it is today operates on, for the most part, slim profit margins. . .

S/he continued to state that this issue was difficult as s/he was in the middle of both concerns. S/he drew a parallel to a recent mandated increase in the minimum wage stating that if I had interviewed him a year prior, s/he potentially would not have felt as conflicted about the issue.

While concerns for costs to large industry or the economy were a more prominent theme among subjects, there were also those that argued that industry needed to pay for the pollution they discharged. Tribal Seafood 4 was sympathetic to the increased costs that industries may be facing, but chalked it up to the cost of business in stating,

I suppose it will just cost them more money, to try to put in filters or whatever they need to do to clean up their discharges. So, expensive. You know, once it's done, it's a short term pain they have to go through. Once it's done, it done. Nobody likes to write that one big check. . . If you want to do business, then that's what you got to do.

Tribal Seafood 2 spoke to the changing world and indicated that the industries should “take a step [and] take your medicine.”

In addition to the tribal seafood company subjects, Restaurant 4 spoke to a lack of foresight and indicated that industries knew that fish consumption was higher than the current standard: “It's almost like, you should have seen this coming and you should have saved money for this time, because that's just ignorance. You know that's not true, you know they're going home and eating salmon.” Restaurant 2 spoke to the need to push large industries, particularly those with high revenues, to be more sustainable, stating “as a small business who sometimes make hard choices to do those things, I want to see big businesses doing the same thing.”

More testing or information. Separate from inquiring whether there was a Washington average for fish consumption, five subjects expressed the need or desire for evidence or more information regarding how toxics were affecting fish and shellfish and/or how this translated into greater risk of cancer. Commercial Fisherman 1 stated that more testing would be needed, noting that current tests are more accurate now than they were previously. Retailer 4 said it would be hard to provide an opinion without seeing more data and Organization 1 stated, “I don’t know enough about how some of these toxins are effecting shellfish currently, so I don’t know if we can blame Boeing or company X or whoever for any problems we are having.”

There were two subjects that discussed the connection between toxicity in fish and cancer as too theoretical. Shellfish Grower 4 asked, “okay, so how many people have gotten cancer from shellfish? . . . I don’t think you could say.” Commercial Fisherman 2 pointed to increased longevity, stating “they really don’t know what causes cancer” and went on to state, “I’d like to see real evidence that what we’re doing now is hurting people. . . if you could show me that, I’d be 100 percent with you. But I haven’t seen it.”

Concerns for different regions or species. There was a small but noteworthy pattern of subjects stating that they were more concerned with one type of seafood or one Washington region over the other, with most pointing to other seafood industries or regions as more at-risk to pollution.

In the case of two of the commercial fishermen, neither believed that toxics affected the anadromous salmon that they were catching. One commercial fisherman discussed that s/he believed that the water quality standards were more applicable to shellfish as the majority of a salmon's weight is accumulated within the ocean and not within the Puget Sound where there is higher pollution and toxicity. Commercial Fisherman 1 pointed to only specific portions of Puget Sound being toxic for fish stating, "All the salmon is not tainted. It's the people who fish in Commencement Bay and Elliot Bay and Everett Harbor and pull those bottom fish and stuff out that eat that fish that's actually affected by water quality." Conversely, Organization 1 spoke to the opposite, stating that the oysters could not be placed within the same bin as salmon in that oysters were stationary and that "the exposure that oysters get we can identify from where that's coming as opposed to going and hanging out by a nuclear reactor in Japan for six months and making its way back here." S/he stated it was "daunting" to think about how oysters fit into this issue as fish and shellfish were like talking "apples and cantelopes."

Other priorities. Throughout discussions of the water quality standards update, there were multiple subjects that expressed that they currently felt as though other issues were either a larger priority in general or for their specific industry. These larger or other issues included: health of hatchery fish, overfishing, other habitat pollution issues such as upland deforestation and water temperature, enforcement of current laws and stormwater

runoff, or eutrophication. In discussing the latter, Shellfish Grower 1 stated this was their bigger concern as nitrogen and phosphates were not treated as pollutants, stating “it’s too big of a problem. I think they [the environmental community] go after the easy target, industry. Easy things to point at. Great visual image – a pipe.”

Need for Higher Water Quality Standards?

Many subjects, as evidenced by the analysis of major themes, held concerns regarding specific portions of the fish consumption rate, cancer risk rate, and effect higher water quality standards could have on businesses, regulations, and perceptions, among other issues. However, in addition to asking subjects for their overall views and opinions toward the update, I generally asked subjects toward the end of the interview if they believed there was a need for higher water quality standards. I did not explicitly ask this question of two subjects, but I extrapolated their positions from their interviews. I broadly grouped subjects into three categories of negative, uncertain, and positive regarding their views of whether there was a need for higher water quality standards. Despite the above discussions and questions regarding the details of the fish consumption rate, cancer risk rate, industry concerns, etc., the vast majority (70%) of the subjects indicated that higher water quality standards were needed. Approximately 17% were uncertain as to whether higher water quality standards were needed and ~13% indicated that higher water quality standards were not needed.

Positive toward higher water quality standards. The vast majority of the subjects indicated that they believed that there was a need for higher water quality standards, with many answering “definitely,” “absolutely,” or “of course I do.” Sports Fishing Guide 2 stated that s/he absolutely did as his/her family consumed all of their

protein from nature: “we refuse to buy meat in the store because we don’t want chemical-laced meat. So, when we go out to the rivers and streams and it’s filled with chemical-laced meat, we’re in a catch 22.” Most others who responded in the positive, however, focused more on the future, pointing to the need to protect Washington’s waters or Puget Sound for the future. Restaurant 2 stated that “we can’t keep polluting at the rate we’re polluting” and Shellfish Grower 5 said “if you’re really concerned with the health of Puget Sound, how can we continue to poison it and expect it to be there for [future generations].”

Uncertain toward higher water quality standards. Five subjects expressed uncertainty in regards to the need for higher water quality standards. Commercial Fisherman 3 and Retailer 4 discussed not taking a position on the issue due to either the need for more testing or to look more closely at the data. In a similar vein, Shellfish Grower 6 expressed uncertainty in responding that s/he was not an expert in the field and Commercial Fisherman 1 said that s/he did not know whether or not higher water quality standards were needed as s/he was not familiar with the stringency of the current regulations. Sports Fishing Guide 4 said that it was a tough question to answer as s/he was focused primarily on hatcheries.

Negative toward higher water quality standards. For the four subjects that expressed a negative opinion toward higher water quality standards, there was a wide range of reasons provided for this opinion. Commercial Fisherman 2 explained that s/he could not see the justification for it and wanted to see more evidence, but discussed that s/he had not studied it as I had. Shellfish Grower 1 was more concerned with the effects of eutrophication, stating that s/he believed that point source industries were an easy

target. Retailer 3 discussed not seeing a need for higher water quality standards, but caveated that s/he was not the one who paid the bills. Retailer 2 believed that the current status was “pretty good” and that “I just think they need to make sure it doesn’t get any worse than it gets right now.”

Analysis by age, subcategory, and gender. In analyzing this data by age group (Figure 12), the 65+ age group was the most dispersed between the three categories with the majority either uncertain or negative toward increasing water quality standards. To further contextualize this age group, the one subject that felt positively that there was a need for higher water quality standards, first responded to the question by answering, "well, how many people get cancer from eating fish and shellfish? I don't think you could say" but then s/he went on to discuss that because it was so theoretical, that clean water and protective standards were good thing. As such, while I ultimately determined that s/he felt there was a need for higher water quality standards, her/his first response was one of uncertainty. On the other end of the spectrum, the youngest group of 18-34 was the

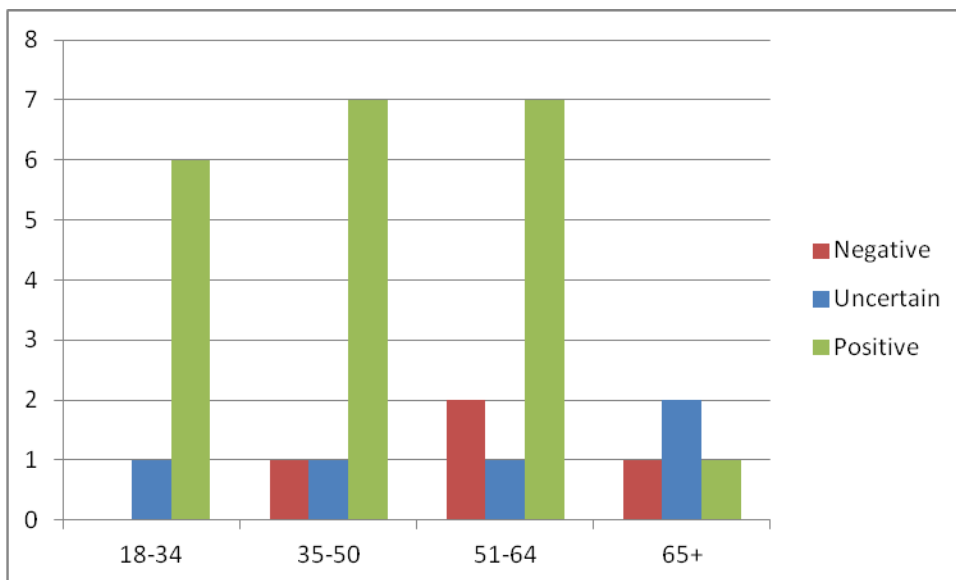


Figure 12. Broad opinions toward the need for higher water quality standards by age group.

most positive, with everyone believing that higher water quality standards are needed. The 35-50 and 51-64 age groups were still primarily positive toward higher water quality standards, but also included those that were uncertain or negative toward higher water quality standards.

I additionally analyzed these three broad categories of negative, uncertain, and positive by subcategory (Figure 13) and gender (Figure 14). The organizations, restaurants, and tribal seafood companies were all unanimous in believing there was a need for higher water quality standards. The majority of sports fishing guides and shellfish growers believed that higher water quality standards were necessary. The subcategories that were the least likely to believe that higher water quality standards were necessary were the retailers and commercial fishermen, with the former subcategory almost evenly split and the latter all either uncertain or negative toward higher standards. However, this stated, in looking at how these different categories relate to one other again, the majority of the commercial fishermen were within the 65+ and 51-64 age

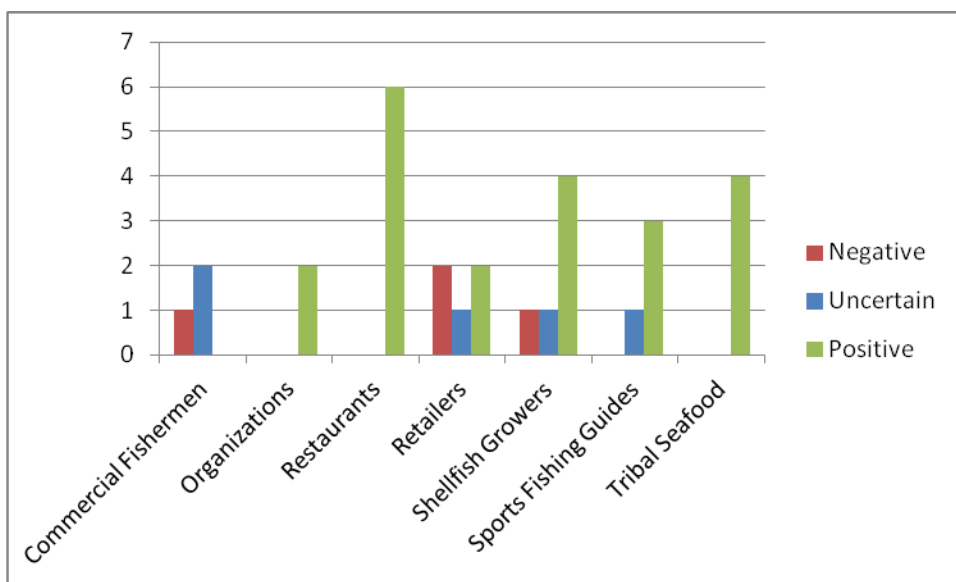


Figure 13. Broad opinions toward the need for higher water quality standards by subcategory.

group, and the majority of the restaurants were in the younger age groups, so I would be unsure if their overall views correlate more to their age group or their profession.

In regards to gender, the majority (85%) of the female subjects stated that water quality standards were necessary. The male subjects were also largely in support of water quality standards (65%), but proportionately had more subjects that were either uncertain or negative toward the need for higher water quality standards.

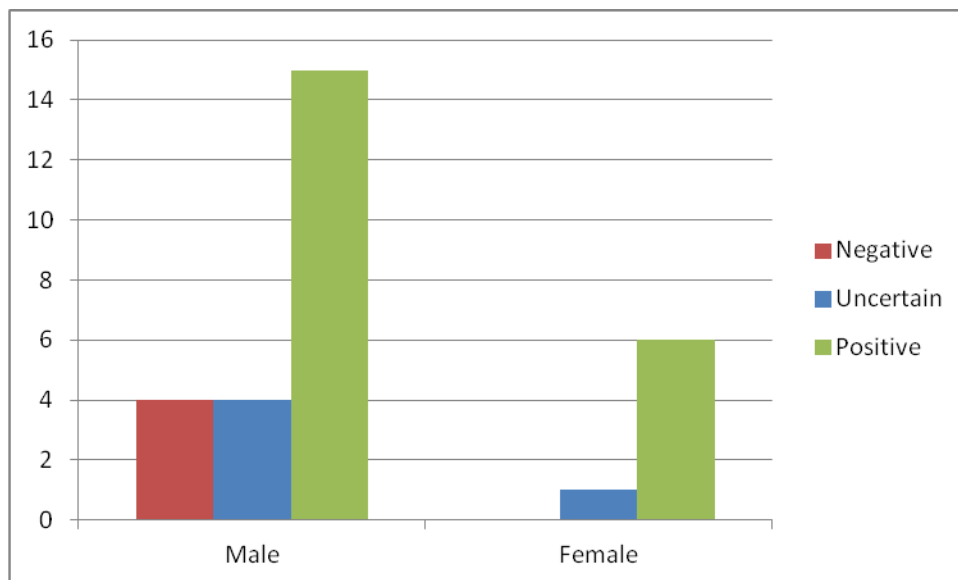


Figure 14. Broad opinions toward the need for higher water quality standards by gender.

Lastly, as tribes have been so heavily involved in this debate and all tribal seafood company subjects stated they believed that there was a need for higher water quality standards, I re-analyzed this information without the tribal seafood company subjects. In viewing the non-tribal subjects' views at the aggregate by age, this information changed significantly wherein the 51-64 age group, in which all of the tribal seafood company subjects fell, became far less favorable to higher water quality standards (Figure 15). Additionally, in removing the tribal seafood company subjects from the gender analysis, the male percentage that believed that there was a need for higher water quality standards dropped from the previous 65% to a little over half at 58% (Figure 16).

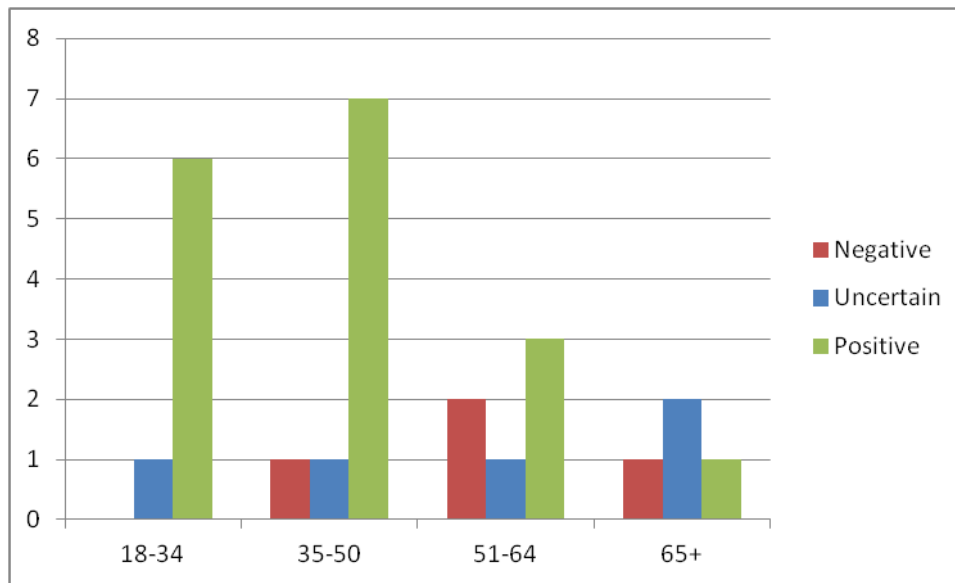


Figure 15. Broad opinions toward the need for higher water quality standards by age group, excluding tribal seafood companies.

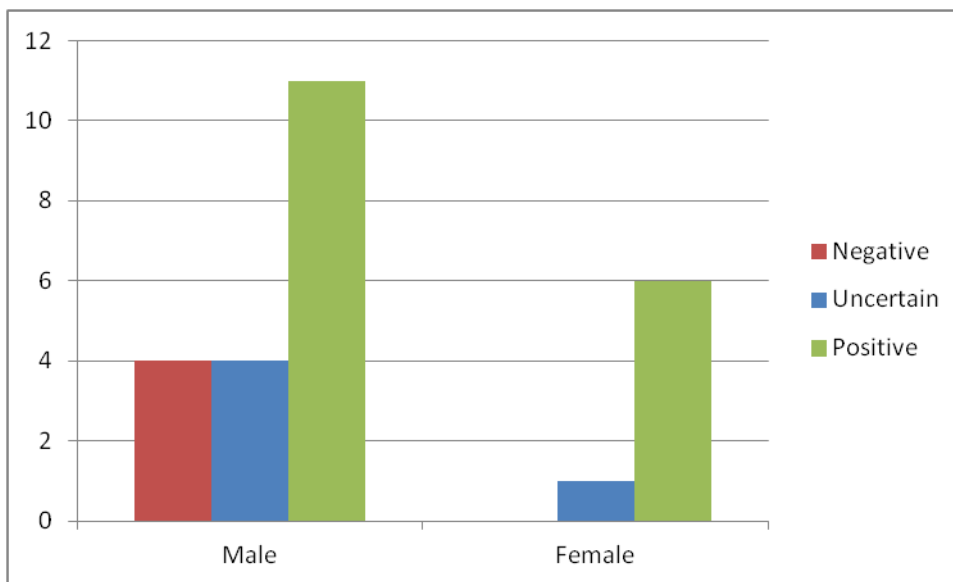


Figure 16. Broad opinions toward the need for higher water quality standards by gender, excluding tribal seafood companies.

Barriers to Higher Water Quality Standards

The last question that I asked was what the subject saw as barriers to higher water quality standards. If the subject indicated that no higher water quality standards were necessary, then I generally excluded this question. In explaining the broader issue to

those who did not have background on the issue or requested additional information (which was the majority of subjects), I discussed the fish consumption rate, cancer risk rate, and public debate surrounding the issue. In discussing the latter, I discussed how many prominent industries were coming out against higher standards. As such, this should be considered and caveated as I began to increasingly feel as though I may have been leading subjects to call out industry as a barrier. That stated, the main barriers subjects discussed were money, politics, and industry, often spoken of in concert with one another and/or interchangeably.

Money and politics were the most commonly identified barrier, with many subjects speaking to money in terms of either lobbying power. Sports Fishing Guide 1 and Tribal Seafood 2 discussed the lobbying groups or lobbying dollars as a barrier, with the former stating “I mean that’s obvious, you got different lobbying groups that the more money they put in the politicians pocket, the better chance he’s going to vote that way. . .” Restaurant 4 discussed barriers in a similar fashion, stating “it seems like so much more about politics and where the dollars land. . .” than the outcome of the issue.

Other subjects discussed industry as a barrier. Shellfish Grower 5 pointed to industry as they are the only stakeholders that were pushing back on the process and had “something to lose.” Organization 1 pointed to Boeing in particular, stating “we have some huge companies that carry a lot of weight in this state and God forbid you do something that is going to make Boeing weak in the knees.” Sports Fishing Guide 3 discussed “corporate America” being a barrier in not wanting to spend any additional money.

Other barriers identified included misinformation from the internet, development and land use pressures, other country's pollution that affects Washington waters, boat pollution from overfishing, and container ship ballast water dumping in Puget Sound.

Conclusion

In conducting interviews with members of the fish and shellfish industries, I found a wide-range of broad priorities, and knowledge bases and views toward the changing fish consumption rate and water quality standards.

Major Issues and Priorities

The major issues and priorities of subjects that were identified before discussing the water quality standards update included availability and/or seasonality of fish and shellfish that they were growing, buying, or selling; and permitting, regulations, and/or management of their respective industries. Shellfish bed closures were also often a concern for the shellfish growers and restaurants, ranging from vibrio to biotoxins to fecal coliform contamination. There was some overlap between their major issues/priorities and their reported customer concerns, with their customers asking after availability or, in the case of oysters, if the product was safe to eat. Other main customer concerns or questions revolved often around whether the product was fresh, local, and sustainable. Fukushima was also spoken of as a customer concern, with most subjects discussing how they needed to educate their customers that this was not an issue for their region or seafood.

Due to it being a recent issue and its potential crossroads to the water quality standards, I also asked shellfish growers, organizations, and tribal seafood companies if they were affected by the recent Chinese ban of US shellfish. While I had assumed that

this issue would have affected multiple subjects and/or potentially cause subjects to be concerned with arsenic emissions and concentrations in shellfish, I found that most subjects were not affected and those that were, generally spoke of it as not having a huge or sustained effect on their business other than requiring additional testing and affecting the sale of older wild geoducks that had accumulated more arsenic. One shellfish grower actually made a parallel to the higher fish consumption rate discussions, seeing similarities between the Chinese forcing shellfish growers to be more restrictive for arsenic and the tribes asking for the fish consumption rate to be based off of their consumption numbers.

Fish Consumption Rate and Water Quality Standards

At 60%, a little more than half of the subjects had at least some knowledge of the fish consumption rate and water quality standards update. Knowledge of the issue could generally be stratified by age and subcategory, with the younger generations less likely to know about the issue and most knowledgeable within the 65+ and the 51-64 age groups. Knowledge could also be delineated by subcategory, with the commercial fishermen, organizations, and tribal seafood companies most likely to be knowledgeable about the issue. The least knowledgeable subcategories proportionately were retailers and restaurants. However, as there was a large overlap between the older age groups and commercial fishermen and the younger age groups and restaurants, it would be difficult to assess whether knowledge base could be correlated to either profession or age within these groups. Males in relation to females were slightly (20%) more likely to be knowledgeable about the issue. In regards to how subjects were first informed of the issue, most pointed to the news, a tribe or inter-tribal consortia, or their organization.

Broadly speaking, the vast majority of subjects I interviewed believed that there was a need for higher water quality standards. However, in discussing the specific details of the fish consumption rate, cancer risk rate, and other portions of the human health criteria, subjects had a broad range of views and concerns toward these issues. Many subjects discussed and viewed the current 6.5 grams/day fish consumption rate as antiquated or unjust, but expressed surprise over a proposed 175 grams/day rate, often remarking it was particularly high, un-relatable, or excessive. Many subjects also discussed wanting to know what the Washington average was for fish consumption and asked if it included imported seafood. In discussing the cancer risk rate, most who discussed this criterion viewed the shift from one in a million to one in a hundred thousand negatively as an empty change. One subject who was involved in Ecology's policy discussions described the cancer risk rate shift as one determined solely by the Governor and not the policy group. Public perception of both the fish consumption rate and the cancer risk rate was discussed as concerns or issues, with some worried that the public could view fish or shellfish as unclean or contaminated. In regards to the cancer risk rate though, some remarked that the public would not be able to comprehend the odds or do the math on that issue. Other main themes within the interviews were a focus or concern on compromise and balance in updating the fish consumption rate and water quality standards, a discussion of the costs to industry, and a desire for more testing or information. In regards to potential barriers to higher water quality standards, many pointed to money, politics, and industry, often speaking of them interchangeably or in concert with each other.

Above and beyond each of the major themes, I found that “water quality” itself was discussed in a multitude of different ways and was defined differently by almost all subjects who discussed it. When asked, the restaurants all replied that they considered water quality in purchasing their seafood, but each discussed different definitions for what constituted water quality, ranging from representing sustainable practices to taste and texture of the seafood. Multiple shellfish growers discussed water quality in regards to the different issues including effects of eutrophication or the levels of plankton available for shellfish. Multiple sports fishing guides discussed water quality in regards to hatchery fish or high water temperatures caused by dams.

Of the subjects that I interviewed, the most likely to believe that there is a need for higher water quality standards are the subcategories of organizations, restaurants, tribal seafood companies, and sports fishing guides; the age groups of 18-34, 35-50, 51-64; and female subjects. However, when removing the tribal seafood companies, who are presumably more informed and invested in the issue due to the large tribal involvement in the debate, the age groups and gender analysis becomes more focused. In excluding tribal seafood companies, the most likely subjects to believe there is a need for higher water quality standards are the subcategories of organizations, restaurants, and sports fishing guides; the age groups of 18-34 and 35-50; and female subjects.

The least likely believe there was a need for higher water quality standards are the commercial fishermen and retailers, and the age group of 65+. That stated, there was a large overlap between the younger age groups and restaurants, and also the older age groups and commercial fishermen.

CHAPTER VII

CONCLUSION

Introduction

The treaty tribes in Western Washington, in advancing higher water quality standards, are engaged in a multi-prong strategy that has included working with the State, turning to their trustee for Federal support and action, reaching out to industries, and engaging in a partnership with the environmental community to encourage public support. The Clean Water Act, in calling for all waters to be fishable and swimmable, is structured to provide within the human health criteria an essential backstop for preventing the externalization of toxic industrial pollution to common-pool state waters. However, the human health criteria that feeds into the water quality standards is an incredibly dense equation, with a multitude of factors that, when altered, can significantly impact the resulting water quality. This complex criteria has been the center of a public debate within Washington and subject to intense Boeing and AWB lobbying that has greatly affected the current trajectory of the water quality standards update.

Below, I discuss the knowledge base of the fish and shellfish industries toward the fish consumption rate and water quality standards, the commonalities between members of the fish and shellfish industries and the other group narratives, and Ecology's current draft rule and status of the debate. I then conclude my thesis by providing recommendations for advancing higher water quality standards and future research.

Fish and Shellfish Industry Members' Knowledge of Issue

Overall, 60% of the fish and shellfish industry member subjects had at least some knowledge of the fish consumption rate and water quality standards debate. However,

this number dropped significantly down to approximately 33% when focusing on those who professed in-depth, rather than passing knowledge of the issue. This relative lack of in-depth knowledge of this issue validates the continued need for a public information and outreach campaign to educate the public at large, as I would assume (although would not be able to conclude without a corresponding study on the public) that members of this industry would be more likely to be knowledgeable of fish and shellfish issues than the general public. Many of the subjects also discussed that their customers were concerned with issues of toxicity in fish and shellfish and/or whether fish and shellfish were safe to eat, which additionally validates the need to educate the public on this issue, as well as the potential for overall public support for higher water quality standards.

Fish and Shellfish Industry Members' Commonalities with Other Groups

In analyzing these subjects at the aggregate with AWB and Keep Our Seafood Clean Coalition, the two vocal groups vying for control over the outcome of the water quality standards update, there are commonalities with both groups. Commonalities with AWB include concern for increased regulations and/or cost and desire for compromise and balance, and with the Keep Our Seafood Clean Coalition they include seeing the fish consumption rate as antiquated, viewing the cancer risk rate negatively, and holding a concern for public perception.

A common concern of fish and shellfish industry subjects that is, not surprisingly, shared with AWB is a worry for increased regulations and/or costs. Many of those in the fish and shellfish industries expressed this in multiple ways, first with regulations or permitting as a main issue and concern for themselves within their overall priorities, and then within the water quality standards-specific questions as a concern for other

industries. Many subjects expressed concern for costs to industry or stated they needed more information as they were unsure what regulations would be enacted with higher water quality standards. An additional crossroads with AWB includes a concern for compromise and balance, with AWB repeatedly expressing the need for this with their valuating language and the fish and shellfish industries often remarking that this issue was difficult and there would need to be a compromise and balance.

Some within the fish and shellfish industry shared a similar view with the Keep Our Seafood Clean Coalition in seeing the 6.5 grams/day fish consumption rate as antiquated, outdated, or inaccurate. A second commonality included some viewing the cancer risk rate negatively, seeing it as an empty change or a shell game. Multiple fish and shellfish industry members also expressed a concern for public perception, which is tacitly shared by the Keep Our Seafood Clean Coalition, inherent in their name and the common practice of pairing pollution concerns with statements that fish and shellfish are and should be safe to eat.

While there are commonalities with both groups, I would argue that AWB, in focusing on the potential for greater regulations and costs, is currently speaking to issues that resonate more deeply as core concerns for many of the fish and shellfish industry subjects.

Ecology Draft Rule and Current Status

While this thesis primarily focuses on analyzing and chronicling the water quality standards update and debate from approximately 2011 to December, 2014, the issue continues to progress and Ecology released their official draft water quality standards rule in January, 2015. This draft rule not only increases the fish consumption rate to 175

grams/day and the risk of cancer to one in a hundred thousand or 10^{-5} , but also increases the body weight factor from 70 kg to 80 kg, and creates special rules for the toxics arsenic, methylmercury, and PCBs (WDOE, 2015). As detailed by Governor Inslee, these changes to the human health criteria would have resulted in actually *increasing* the allowed amount of pollution for approximately 30% of the current toxics (Salerno, 2014). However, due to Governor's proclamation to not allow any "backsliding," the draft rule retains the current water quality standards levels (6.5 grams/day fish consumption rate at 10^{-6}) for 30% of the toxics. As detailed within Chapter 4, there is a Federal requirement that generally prohibits Ecology from issuing a permit that allows more pollution than a previous permit, which may be a (or the) deciding factor in the Governor's decision to not allow backsliding.

In addition to these factor changes, Ecology's draft rule is choosing to retain the relative source contribution at its current rate, which does not account for any outside sources of contamination. Ecology is also choosing to use Bioconcentration Factors (BCFs) for toxics, rather than the more comprehensive Bioaccumulation Factors (BAFs) that include toxic uptake from all sources. For both of these factors, Ecology is ostensibly arguing that, despite EPA recommendations to include a relative source contribution of at least 20% and to use or create local BAFs, doing so would be outside the scope of the Clean Water Act (WDOE, 2015). Ultimately, with the exception of the increased fish consumption rate that would drive more stringent water quality standards, Ecology's draft rule chooses to either increase or retain other human health factors within the human health equation at their current rates, effectively undercutting or diluting the 175 gram/day fish consumption rate to a 17.5 gram/day fish consumption rate or lower.

The lobbying by industry groups, particularly Boeing and AWB, has elevated this water quality standards update beyond the confines of Ecology, the responsible agency for Washington water pollution control under the Clean Water Act, and into the Governor's office. Governor Inslee himself said within his press conference that they were choosing to change the cancer risk rate as the resulting criteria would have created "tough standards" that would create "an unacceptable level of uncertainty for businesses and local governments. . ." (Salerno, 2014). The Governor's statement and Ecology's draft rule demonstrate how the financial effects on industry, both real and potential, became the driving factor in determining the non-fish consumption rate human health factors and the draft water quality standards. That stated, the Governor is attempting to advance a toxics reduction package through the Washington State legislature, which could help reduce the amount of toxics within Washington waters. However, this bill will be highly subject to legislative favor and, I would argue, should be acting as a complement to, rather than substitute for, a more stringent water quality standards rule.

While the treaty tribes have an entrenched co-management relationship with the State in regards to fish and shellfish allocation management, their right to protection of fish and shellfish habitat is more legally nebulous and thus more susceptible to powerful political interests that have significant influence over the State, as demonstrated by the current water quality standards debate. However, in analyzing the long and complex legal history of fish and shellfish allocation and habitat management and protection in Washington State, the concurrent strategies the treaty tribes are advancing, particularly Federal legal action, have often held great success for advancing fisheries rights and fish habitat protections.

Regardless of Ecology releasing a draft rule in January, 2015, the EPA is continuing to promulgate water quality standards for Washington in a parallel process to the State's draft rule. The EPA, as both a Federal tribal trustee and authority of the Clean Water Act, has vocally championed both a higher fish consumption rate and a consistent 10^{-6} cancer risk rate for Washington State, but has also indicated that they hope Washington can create standards on our own. As such, this dynamic debate is far from over and contestations over multiple uses and perceptions of the common-pool resources of Washington waters will continue, with the safety and toxicity of our water, fish, and shellfish ultimately at stake.

Recommendations

Below, I provide preliminary recommendations and/or strategies for advancing higher water quality standards that include: 1) engaging portions of the fish and shellfish industry to advocate for higher water quality standards; 2) additional testing and/or regulatory controls for toxics in fish and shellfish; 3) the addition of a Federally-mandated separate tribal consultation role within state water quality standards; and 4) tribal legal action under Boldt Decision Phase II.

1) Engaging Portions of the Fish and Shellfish Industries

While there was a wide range of views and opinions and there were many subjects that expressed positive views toward higher water quality standards, the categories that I view as most likely to advocate for higher water quality standards include those subjects that are:

- within the 18-34 and the 35-50 age groups; and/or

- restaurants that specialize in local seafood, tribal seafood companies, organizations that advance local seafood, and sports fishing guides; and/or
- female

Again, there were numerous subjects that advocated for higher water quality standards outside of these groups, including one male shellfish grower who was passionate regarding the need to protect Puget Sound from pollution and for future generations. However, in broadly analyzing and aggregating the views and opinions, I have demarcated these as the most likely subcategories, age groups, and gender to believe there is a need for higher water quality standards.

That stated, communicating the dense nature of this issue is incredibly important as many, while expressing positive views toward the need for higher quality standards, had specific concerns and questions regarding the criteria or implementation. Keep Our Seafood Clean Coalition has been emphasizing some issues that resonate with the fish and shellfish industries, but AWB has been communicating and stressing issues that have also been identified as concerns and issues for the fish and shellfish industries, including core concerns of potential higher costs and/or regulations. Additional issues that need to be answered and communicated to the fish and shellfish industries include more information on: why 175 grams/day is being considered for the default fish consumption rate, the issue in general and/or testing to show how toxics are affecting fish and shellfish, a Washington fish consumption rate average and/or how that fits into the issue, how imported seafood relates to the issue; and how increased water quality standards will affect industry regulations and costs.

2) Additional Testing and/or Regulatory Controls for Toxics in Fish and Shellfish

While I have stated that certain subcategories, age groups, and a gender may be more likely to advocate for higher water quality standards, I am hesitant to suggest that the fish and shellfish industries at the aggregate are likely to advocate for higher water quality standards without additional testing and/or regulatory controls in place for toxics in fish and shellfish. One of the main concerns and priorities identified within the fish and shellfish industries are the regulations, permitting, and management of their seafood, but toxicity in fish and shellfish was not expressed as a concern in regards to shellfish bed closures or fish advisories that affected the industry. Additionally, multiple subjects expressed a lack of knowledge and desire for more information on how toxics affect different types of seafood.

While it was outside of the scope of thesis to discuss, the fish and shellfish industries are regulated separately with the fish industries regulated by Fish and Wildlife and the shellfish industries regulated by Health and the Federal Drug Administration (FDA). In an informal conversation with a Health employee regarding the China ban and the water quality standards update, they indicated that Health concentrates on the issues that make the public immediately (within 24-48 hours) sick, such as vibrio, biotoxins, or fecal coliform contamination, with no regular testing for accumulative toxics. Toxics testing would occur when an urban growing area was on the fringe of being approved or conditionally approved, but once the growing area was open, the standard testing that would occur was primarily for bacteria (M. Johnson¹, personal communication, April 18, 2014).

¹ Source has been anonymized.

Ultimately, without additional testing for toxics in fish and shellfish and/or regulatory controls by the FDA and Fish and Wildlife, I do not believe that the *aggregate* fish and shellfish industries will be invested in and willing to advocate for increasing the water quality standards, as specific affects of toxics on fish and shellfish are not well known and toxics, and, outside of some customer concerns, do not currently affect them from a business standpoint. However, as this industry views themselves as already highly regulated, I would understandably see additional regulatory controls as not well-received. There is an irony as well in this recommendation in stating that in order for the aggregate fish and shellfish industries to care about or advocate for larger regulation of point-source pollution, then more testing and potentially larger regulations and restrictions would need to be placed on them.

A senior policy staff member at NWIFC once remarked that water quality could and should be ranked and valued in a similar way that car safety is ranked and valued, discussing how the car industry eventually embraced their regulations to the point where car companies now compete with one another for highest levels and rankings of safety. Shifting this to water quality standards, if a water quality ranking system were developed or if higher State water quality standards were widely advertised, then Washington fish and shellfish industries could discuss their product as originating in the cleanest and most regulated water in the nation and market it at a higher price (F. Wilshusen, personal communication, April 4, 2014). I discussed this concept briefly with Commercial Fisherman 3 and he replied, “if we could, but it doesn’t work out that way, unfortunately.” That stated, I have included further research into this topic under future research.

3) Separate Tribal Consultation Line within EPA Guidance

As discussed within the literature, successful co-management with indigenous people can occur when there is power-sharing, commitment from agencies, clear agreements, and a separate line of consultation from other stakeholders processes, among other agreements. While Ecology started their water quality standards update process by engaging in a separate parallel consultation process with the tribes, they opened up the policymaking to a larger stakeholder process after the post-industry backlash and expected the tribes to participate within these forums. Most tribes felt betrayed by the shift and largely chose not to participate in policy forums, seeing these forums as delays and as a stakeholder process that was not appropriate for their roles as governments and fisheries co-managers. They instead called for a government-to-government consultation process with Ecology and for intervention from their Federal trustee, the EPA.

The State agencies have markedly different histories and legal relationships with the tribes and Ecology engages with the tribes on a “consultation” rather than “co-management” basis. As demonstrated by the history of co-management relations within Washington State, successful collaboration between the State and tribes can and has occurred, but generally only when there is a Federal legal backing prior to this collaboration. Within EPA’s guidance to states, they include the recommendation that the public have a significant role in the review process and that states must document how all public comments are addressed. They also include a minimum requirement that high risk groups be considered, but their guidance allows for these groups to be protected at a higher cancer risk rate. The EPA additionally requires that states ensure that downstream water quality standards are not infringed upon due to upstream pollution. Neither of first

two recommendations specifically discusses tribes as sovereigns, how they are affected by fish and shellfish caught and grown in common resource state waters, or a need to engage them directly or within a parallel process. The third downstream uses requirement has the most teeth in that EPA has the ultimate authority to legally stop upstream pollution from affecting the water quality standards of downstream state or authorized tribe, but it again mainly speaks to recommendations to involve the public and “encourages” the state to ask for comments from states or authorized tribes that share common waters.

I would recommend that EPA institute an explicit and structured tribal consultation process within their guidance to states. Without a distinct tribal discussion and consultation role required by EPA within their water quality standards guidance, then tribal consultation will occur within the existing power relations of that state, be subject to more powerful stakeholder interests, and rely on the Federal trustee for intervention or promulgation, the latter of which is only meant to occur when something within the current system has gone awry.

4) Legal Action under Boldt Decision Phase II

The Boldt tribes within Washington State are currently in the process of testing, and the Federal courts have so far upheld, their legal rights to fish habitat protection through the Martinez Decision. While water quality is a distinct issue from that of fish-blocking culverts, it was specifically included as one of the five environmental conditions that need to be present to support salmon and steelhead survival within Boldt Decision Phase II. If the current EPA promulgation does not occur and the State is able to obtain EPA approval for the current 175 grams/day and 10^{-5} cancer risk rate, then it is possible

that Boldt tribes could pursue the “concrete facts” of this issue through Federal courts and argue that the State has the duty to the treaty tribes to protect water quality as essential fish habitat.

Future Research

Future research that could be explored includes: discussion and research regarding the Health and ISSC regulations affecting toxicity in shellfish; the potential for and/or how Health’s fish advisories program interacts with and informs the Washington fish and shellfish industries; the suite of information on toxicity testing of fish and shellfish tissue, including in 303d listed waters and within Ecology’s Toxics and Nutrients grant program and how that information is disseminated to the public and fish and shellfish industries; analysis of how and if it would be beneficial to the fish and shellfish industries to institute a water quality ranking system; and using the theoretical framework of the political ecology of health to discuss how the water quality standards update is affected by how the public perceives risk.

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APPENDIXES

APPENDIX A

Interview Questions

SPORTS FISHING ORGANIZATIONS & GUIDES

Background

- How long have you been a fishing guide?
- When was your company founded / how long has your guide business been open?
- How/why did you get into the fish guide business?
- What areas do fish? How much of the time do you spend in Washington?
- Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?
- Would you say that this is a family business?
- How many sports fishermen do you take out per week?
- Who would you say is your typical demographic in regards to your customers?

Broader Seafood Landscape

- What are some of the major issues you are dealing with as a fishing guide? What would you say is your top priority?
- Would you say that your main concerns and priorities vary by which state you are fishing?
- What would you say are some of the other kinds of issues that fishing guides in Washington are facing?
- Do you know of other fishing guides that have similar issues to yours?
- What would you say are sports fishermen's major issues and top priorities?
- Have you been affected and/or how often are you affected by fish advisories?
- [Optional] What are your views/experiences toward/with state regulation?

NON-TRIBAL SHELLFISH GROWERS

Background

- What kinds of shellfish do you grow and sell?
- Where do grow your shellfish?
- How long have you and/or your company been in the shellfish industry?
How/why did you get into the shellfish industry?
- Would you say that this is a family business?
- [Prompt] How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?
- How do you primarily sell your seafood?

- [Prompt] Are you mainly a wholesaler or do you engage in retail? Is the retail online, retail store, farmer's market, restaurants...?
- What or whom would you say is your biggest market?
- [Prompt] Would you say WA, national, international? If in Washington, to which county or counties do you sell the majority of your shellfish?

Broader Seafood Landscape

- What are some of the major issues you are dealing with as a shellfish grower? What would you say is your top priority?
- Would you say that other shellfish growers have similar issues?
- [Optional] What are some of the other kinds of issues shellfish growers in Washington are facing?
- Have you been affected by growing area shellfish bed closures? If so, how often?
- What would you say are your customers' main concerns and questions regarding your shellfish?
- [Optional]: What are your views/experiences toward/with state regulation?

Chinese Ban of West Coast Shellfish

- Were you affected by the recent Chinese ban of west coast shellfish?

TRIBAL SEAFOOD COMPANIES

Background

- What kinds of seafood does the tribe specialize in growing, catching, and selling?
- Where do you grow your shellfish? Or from where do you buy your shellfish?
- How long has the tribe been operating this seafood company? How/why did you decide to incorporate in this way?
- How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?
- Is this a family business?
- How do you primarily sell your shellfish? [Prompt] Is it online, retail store, farmer's market, restaurants...?
- What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?
- If in Washington, to which county or counties do you sell the majority of your seafood?

Broader Seafood Landscape

- What are some of the major issues you are dealing with as a seafood company? What would you say is your top priority?

- Would you say that other shellfish growers and seafood companies have similar issues?
- What are some of the other kinds of issues that shellfish growers and seafood companies in Washington are facing?
- Have you been affected by shellfish bed closures? If so, how often?
- What would you say are your customers' main concerns and questions regarding your seafood?
- [Optional]: What are your views/experiences toward/with state regulation?

Chinese Ban of West Coast Shellfish

- Were you affected by the recent Chinese ban of west coast shellfish?

SEAFOOD RETAILERS

Background

- How long have you been in the seafood industry? How/why did you get into the seafood industry?
- What kinds of seafood do you sell?
- Where do you fish and/or grow your shellfish? Or from where do you buy your fish and/or shellfish?
- How do you primarily sell your seafood? [Prompt] Is it online, retail store, farmer's market, restaurants...?
- How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?
- Is this a family business?
- What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?
- If in Washington, to which county or counties do you sell the majority of your seafood?

Broader Seafood Landscape

- What are some of the major issues you are dealing with as a seafood retailer? What would you say is your top priority?
- Would you say that other seafood retailers have similar issues?
- What are some of the other kinds of issues that seafood retailers in Washington are facing?
- Have you been affected by shellfish bed closures or fish advisories? If so, how often?
- What would you say are your customers' main concerns and questions regarding your seafood?
- [Optional]: What are your views/experiences toward/with state regulation?

RESTAURANTS SPECIALIZING IN LOCAL SEAFOOD

Background

- How long has your restaurant been open and in this area?
- How long have you been in the restaurant business?
- Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?
- Is this a family business?
- Why did you decide to specialize in cooking local seafood?
- What kinds of seafood does your restaurant/bar specialize in cooking?
- From where do you buy your fish and/or shellfish?
- Who would you say is your typical demographic in regards to customers?

Broader Seafood Landscape

- What are some of the major issues you are dealing with as a restaurateur in regards to seafood?
- What are your main concerns and priorities when it comes to obtaining seafood?
- What would you say are your customer's top concerns or requests when it comes to seafood?
- Does water quality affect or come into play in determining from where you purchase your seafood?
- Have you been effected by shellfish closures and/or fish advisories? If so, how often?
- [Optional]: What are your views/experiences toward/with state regulation?

ORGANIZATIONS ADVANCING LOCAL SEAFOOD BUSINESSES

Background

- When was your organization founded?
- Why was this organization founded? What would you say is the primary purpose for your organization?
- How big is your organization (how many businesses/organizations would you say that you represent)?
- [Prompt] What type of businesses do you represent?
- How many of your businesses market in local fish or shellfish? [Prompt] What percentage?
- Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?
- Is this a family business?

Broader Seafood Landscape

- What are some of the main concerns and priorities you are dealing with in advocating for local businesses? What would you say is your top priority?
- What type of involvement does or has your organization had, if any, in affecting environmental regulations?
- What would you say are your member businesses' major issues and top priorities?
- [Prompt] The same as your issues and priorities or different?
- Would you say that other local food associations have similar issues, concerns, and priorities to yours?
- What are some of the other kinds of issues that other local food associations are facing?
- [Optional] What are your views/experiences toward/with state regulation?

NON-TRIBAL COMMERCIAL FISHERMEN & AGENCIES

Background

- What kinds of fish do you specialize in catching?
- Where do you fish?
- How do you primarily fish? What is your method?
- How long have you been a commercial fisherman? How/why did you get into the fish industry?
- How do you primarily sell your fish? [Prompt] Is it online, retail store, farmer's market, restaurants...?
- What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international? If in Washington, to which county or counties do you sell the majority of your seafood?
- How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?
- Is this a family business?

Broader Seafood Landscape

- What are some of the major issues you are dealing with as a commercial fisherman? What would you say is your top priority?
- Would you say that other commercial fishermen have similar issues?
- What are some of the other kinds of issues that commercial fishermen in Washington are facing?
- Have you been affected by fish advisories? If so, how often?
- What would you say are your customers' main concerns and questions regarding your fish?

- [Optional]: What are your views/experiences toward/with state regulation?

COMMON QUESTIONS FOR ALL INTERVIEWEE GROUPS

Water Quality Standards and Fish Consumption Rate Awareness and Perception

- Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?
- If yes, how did you hear about this update?
- What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?
- Do you agree? What is your perspective?
- If no, [then provides brief background] what is your perspective on this issue?
- Do you think that there is a need for higher water quality standards in Washington State?
- What do you see as potential barriers to higher water quality standards in Washington State?

Contact Recommendations

- Would you be able to recommend other [members of your industry] to talk to about their priorities and perceptions of water quality and the changes to Washington's water quality standards?

APPENDIX B

Informed Consent

Central Washington University RESEARCH PARTICIPANT INFORMED CONSENT

Study Title: Fish and Shellfish Industry Members Knowledge of and Opinions Toward Washington's Water Quality Standards

Investigator: Tiffany Waters, Resource Management Graduate Program

Faculty Sponsor: Lene Pederson, Ph.D., Anthropology

1. What you should know about this research:

- I am asking to interview you.
- This consent form explains my thesis and your part by being interviewed. Please read it carefully and take as much time as you need. You will get a copy to keep.
- Ask questions about anything you do not understand now, or when you think of them later.
- You are a volunteer. If you decide to be interviewed and change your mind later, you may quit at any time without any penalty.
- There are no foreseeable risks to participating in this study.

2. Why is this research being done?

As part of my graduate thesis, I want to better understand the fish and shellfish industries' knowledge of and views and opinions toward the proposed changes to Washington State's water quality standards and human health criteria, which includes the fish consumption rate. I will interview approximately 30 individuals from different subcategories of the fish and shellfish industries. You may not directly benefit from taking part in the research. However, I hope the results of this study will provide more information about the potential of members of the fish and shellfish industries to advocate for higher water quality standards.

3. What will happen if you agree to be interviewed?

If you agree to be interviewed, I will schedule a convenient time to interview you. It will take about 30 minutes to 1 hour. I will ask questions about your background in the fish and/or shellfish industry, some of the issues that you are facing in your field, and your knowledge and views of Washington's proposed changes to our water quality standards. I will not use your name in notes or in my thesis unless you give me permission to use your name. I will ask permission to record the interview. If you want to stop the interview, I will ask you whether I may use information gathered up to that point.

4. What information about you will be kept private and what information may be given out?

I will not identify you in any way in my thesis unless you give me specific permission

below. If you give me permission to use your name, I will retain a link between your name and your interview. If you choose to remain anonymous, I will assign and use a random code for your interview, including any notes, transcripts, and recordings. I will keep a master list that links your name to a random code within a private password-protected file on my computer. After completion of my thesis, I will delete the recording and master list, removing any direct links that identify you with your code number.

5. What should you do if you have questions about the interviews or wish to read the completed thesis?

Call Tiffany Waters at _____. If you have questions about your rights as a participant or if you think you have not been treated fairly, you may contact the Human Protections Administrator at 509.963.3115.

6. What does your signature on this consent form mean?

By signing this consent form, you are not giving up any legal rights. Your signature means that you understand the interview process, have been able to ask questions about the information given to you in this form, and you agree to be interviewed. You received a copy of this consent form.

Initial here _____ if you give permission for your name to be used in notes and my thesis.

Participant's Printed Name: _____

Participant's Signature: _____ Date: _____

Investigator's Signature: _____ Date: _____

APPENDIX C

Interview Dates, Subcategory, Location, and Duration

<u>Date</u>	<u>Subcategory</u>	<u>Location</u>	<u>Length (min)</u>
3-Aug	Commercial Fisherman 1	North Puget Sound	35.50
5-Oct	Commercial Fisherman 2	Coast	51.25
29-Oct	Commercial Fisherman 3	Coast	16.50
16-Jul	Organization 1	South Puget Sound	59.00
6-Aug	Organization 2	Hood Canal / Straits	55.00
9-Jul	Restaurant 1	Hood Canal / Straits	21.00
16-Sep	Restaurant 2	Coast	22.50
18-Oct	Restaurant 3	Mid Puget Sound	47.25
18-Oct	Restaurant 4	Mid Puget Sound	22.00
11-Sep	Seafood Retailer 1	Hood Canal / Straits	22.00
25-Sep	Seafood Retailer 2	Mid Puget Sound	23.50
27-Sep	Seafood Retailer 3	Coast	14.75
23-Oct	Seafood Retailer 4	South Puget Sound	15.75
25-Oct	Seafood Retailer 5	Coast	39.75
15-May	Shellfish Grower 1	South Puget Sound	25.50
13-Aug	Shellfish Grower 2	Hood Canal / Straits	34.00
23-Jul	Shellfish Grower 3	Hood Canal / Straits	69.50
24-Jul	Shellfish Grower 4	South Puget Sound	44.75
13-Aug	Shellfish Grower 5	South Puget Sound	31.75
16-Sep	Shellfish Grower 6	Coast	48.50
2-Sep	Sports Fishing Guide 1	Columbia	22.75
5-Oct	Sports Fishing Guide 2	Columbia	23.50
8-Oct	Sports Fishing Guide 3	Mid Puget Sound	18.50
27-Oct	Sports Fishing Guide 4	Washington State	17.50
8-Aug	Tribal Seafood 1	South Puget Sound	53.50
29-Sep	Tribal Seafood 2	South Puget Sound	25.25
2-Oct	Tribal Seafood 3	Hood Canal / Straits	38.00
8-Oct	Tribal Seafood 4	North Puget Sound	25.50

APPENDIX D

Anonymized Interviews

COMMERCIAL FISHERMAN 1

Background

TJW: What kinds of fish do you specialize in catching?

“Salmon, all species of salmon, primarily pink salmon and sockeye salmon. We fish the Fraser river sockeye and pink run. The Canadian Fraser River and there's an international agreement that oversees that fishery and the US, we, get a certain percentage of that catch each year.”

TJW: Where do you fish?

“We're tied to those fish. We're a fix gear, reef netting is like a fish trap, it's fixed. Every year we put the boats out and we anchor them and we wait for the fish to come to us. So, we're not like gill netters or purse seiners that go where the fish are. We are just five percent of the US catch down here. But we do okay.”

TJW: How do you primarily fish? What is your method?

“Reef netting is an old coast Salish tribal fisheries method. All the tribes in Washington, the north sound area and then in southern straits of Georgia on the mainland side, they all reef netted back before the Europeans came. In addition to a lot of other methods. You'll see in some pictures, it's not that much more sophisticated than when the tribes were doing it. A little bit, but we use battered driven winches and we can haul fish a lot faster. But the principle is the same thing.”

TJW: [Additional prompt] You said it was stationary?

“Yah, right off of [North Sound area]. The runs come up right through those areas, straight on it.”

TJW: [Additional prompt] You really have to time it correctly?

“Yah, we go out before the season, get all of the things set up and then we wait for hopefully the fishing openings.”

[omitted to protect anonymity]

TJW: How long have you been a commercial fisherman? How/why did you get into the fish industry?

[omitted to protect anonymity]

TJW: How/why did you get into the fish industry? Was it a family business?

[omitted to protect anonymity]

TJW: [Additional prompt] Actually from the Hood Canal area.

“Do you know [names person from organization]?”

TJW: [Additional prompt] I recognize the name.

“She's very prominent down there as our outreach person. She's great. So I've been in and out and I spent about nine years working for the salmon farmers in Washington as well, so I've been on both sides of that issue, I know a lot about the salmon farming industry.”

TJW: How do you primarily sell your fish?

“We sell it ourselves, we have a little cooperative, of four gears *[assuming # of people who are running reefnet gear, so 4 fishermen]*. We pool our catch and have a little tender that picks up our fish from our fishing boat and brings them into [North Sound city] to be processed. And we have them processed and we retain ownership of them. Most of them are fillets, fresh and frozen vac packed fillets. We sell to high end restaurants and retail stores. Our fishery is very unique in that the fish come in live into our boats and we bleed them right away, get the blood out of them, and get them on ice. So there, we get a much better price than a typical salmon from gillnetter or purse seiner. We sell at a higher price. You'll see our product in [local supermarket] up here in Western WA [Seattle market], high end, and then [a high end Seattle] restaurants. I don't do that selling, another person does that, it's a part of the cooperative. So, our fish is, you know, we retain ownership of it to the wholesale level and then the wholesaler will deliver it. Mainly these markets can pick up our fish directly, they have distribution *[possibly centers, couldn't hear this]*. But our name is identified on the menu and in the stores as [his specific company] so we do have some brand notoriety.”

TJW: What or whom would you say is your biggest market? [Prompt] Would you say it's WA?

“Yes, it is. It's Washington.”

TJW: [Additional prompt] Do you guys go nationally at all?

“Only through buyer's clubs. If you're familiar with buyer's clubs?”

TJW: [Additional prompt] Not really.

“They do it with seafood, they do it in produce and other things you know, where, it's sort of an offshoot of the ag movement where you know a lot of small ag farmers are selling direct to the public and they call them, what do they call them, farm to... farm to market?”

TJW: [Additional prompt] Farm to plate?

“Yah. These are buyers club, people in a city or a community will band together, they've heard about our product, they'd like to get it and they place orders to our guys and he ships it UPS frozen fillets and they go specifically to a spot, say in Minneapolis, and one

person picks it up and they deliver to all of their friends in that buyer's club. That's what we do, otherwise it stays in Washington State.”

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

“Um, I'd say Whatcom County and King and Snohomish County. Both restaurant and retail.”

TJW: How long have you lived in this area?

[omitted to protect anonymity]

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a commercial fisherman? What would you say is your top priority?

“Well, priority is just getting people to eat more seafood. It's the same thing with my [environmental research organization]. You know, we're trying to encourage the consumer to eat more seafood, in particular, US seafood, farm and wild.”

TJW: [Additional prompt] Would you say that is your number one priority?

“It is. To convince people to eat more fish. I give talks about that, rotary clubs and different things.”

TJW: Would you say that other commercial fishermen have similar issues?

“Not so much, because they're not linked to the market way the way our operation is. They sell to the processor and they are concerned and more than they used to be, I think a lot of fisherman, salmon fishermen in particular, are involved with their trade associations to encourage them to do... and there is a lot of politics involved in the management as well, we're not as involved in the management. We're not a very large part of the fisheries. But I follow that, both international and regional.”

TJW: What are some of the other kinds of issues that commercial fishermen in Washington are facing?

“Well, number one they want to be assured of seasons each year. They're concerned about the, the ...”

TJW: [Additional prompt] They're concerned with making sure that harvest levels are?

“Yah, the escapement happens and harvest follows. Of course, we also compete with the tribal fishermen, they get... the Boldt Decision gave them access to half the resource. And as it turns out, with this Canadian fish that we catch, they get a much bigger percentage of that.”

TJW: [Additional prompt] So the Canadian tribes do?

“No, the US tribes do compared to the non-tribal fishery. It isn't fifty-fifty and I'm not sure why that is. I think it's because this was a traditional fishery for them. So anyway, we're concerned with the management issues. By and large, we trust the management agencies. We're not like the east coast and the gulf where there's a lot of acrimony. And we don't have to compete so much here with the sports fishing. There's not much of a sports fishery on these fish until they enter the river. So, we're not out there competing with sports fisherman for the share of the catch. Now if you were a troller off the coast, there are charter boats that go out and get salmon and there is some competition for the share of the catch. But, by and large, here and in Alaska, the fishermen are pretty trusting of the fisheries agencies and in other areas, it's not quite the same.”

TJW: Have you been affected by fish advisories? If so, how often?

“Fisheries advisories? Well, we do get closed down, but generally for management to get spawners to get up the river, it's not to allocate between different groups. If we shut down, then we all shut down. It's for the resource's health.”

TJW: What would you say are your customers' main concerns and questions regarding your fish?

“We have a customer base that's looking for a high quality product. They're willing to pay a higher price to get a superior product and so we do our best to keep the quality as high as we can. So I would say that is the number one concern of ours. Because they are paying 13 or 14 dollars a pound for our fish and it has to be an excellent fish for them to want to pay that. I think they're also enamored with the fishery and the uniqueness of it. The local. Local really helps in the Puget Sound area, mostly shellfish and for this fish. So, at [high end Seattle restaurant], a wait person can talk about this product and where it comes from and that helps.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“I have.”

TJW: If yes, how did you hear about this update? What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

“It was actually not as a fisherman, but with [environmental research organization] because do some training of meat cutters, the people behind the counter, the seafood counters, and we have a partnership with [a community college] and they didn't have seafood in their two year curriculum. So, I introduced a seafood curriculum, so we try to teach them about where the fish is caught and how it's caught and is it sustainably harvested. So, I learned when we were doing research with the Department of Health on how they were promoting... If you've been to the Department of Health, they do quite a bit about seafood. They talk about both the negative and the positive, if there's pollution alerts and red tides and stuff. So, I learned then, that's when I learned about it. And then started to see things in the press. We have a connection with the Department of Ecology,

through the water quality work that we do, so we heard about this from them as well. And the Puget Sound Partnership, we have a strong relationship with them, so we heard about this from them.”

TJW: [Additional prompt] Explains Puget Sound work that she is doing at work.

“So, then I was then concerned about... I know quite a bit about seafood consumption in the US and worldwide and I know some of the statistics and I was intrigued by the fact that tribes and certain other ethnic groups ate more fish. I knew they ate more fish, but we didn't know how much. And I saw these numbers being bandied around by Oregon and I thought they were excessive. Just my sense was they were so excessive compared to what we know about how much fish in general, in the US, eat. It's about 14 pounds per capita. Did you know that?”

TJW: [Additional prompt] 14 pounds per capita? Is this similar to the 6.5 that we're currently working off of?

“No, 6.5 is way less than that. So, the US standard, I mean the Washington standard is much lower. But the 14 pounds is much much higher.”

TJW: Is the 14 pounds per capita for every person?

“That's per man, woman, and child each year. That's a round rate, that's the fish coming out of the water that hasn't been processed, either shellfish and finfish.”

TJW: [Additional prompt] So that includes those who eat fish and don't eat fish, an average?

“Yah, it's an average. And how they get it, I don't know. They total up production plus imports and divide it by 350 million people. And it's been around that level for years and years. It got as high as 16 a few years ago, and it's since dropped and last year it took a pound per capita drop. We figured it's primarily based on price, the price of shrimp went up. We eat more shrimp than any other product in this country. And prices and there's still this negative information out there about fish that I think, like mercury and seafood, that kind of thing, that affects people. And I'm sure that Washington consumers, especially Western Washington, probably eat a fair amount more than 14 pounds per capita, but I would be really interested in knowing how much. And then the tribes.”

TJW: [Additional prompt] Provides information about tribal studies and the amount of 175 grams.

“And that's every day? I just can't imagine that people do that... But maybe the tribes do.”

TJW: [Additional prompt] Continues to provide information about tribal studies and saying that 175 would be a seafood meal a day, and that from the tribal perspective that was a compromise.

“That would still be around 70 or 80 pounds per year and that's getting up to what the Japanese eat, they're about 90. The French and Spanish are 45 or 50. Well, Ecology is in a tough spot.”

TJW: [Additional prompt] What is your perspective on the water quality standards and fish consumption rate update?

“I don't know. Because I don't know what kinds of regulations kick in if this goes up. It's hard for me to figure out how they can just use fish consumption as the primary driver for this. And why are we letting people... the other question is the main tribe's run here... they consume salmon and shellfish from non-polluted waters. All the salmon is not tainted. It's the people who fish in Commencement Bay and Elliot bay and Everett Harbor and pull those bottom fish and stuff out that eat that fish that's actually affected by water quality.”

TJW: [Additional prompt] Not even with the migratory patterns of the salmon, you don't think they get affected?

“Oh yah, salmon isn't affected by that, at least in my mind it isn't. And so, how can the consumption of products that aren't affected by the water quality issues drive the water quality standards? If I was the industry, the Boeings of the world, I would try to make the argument. And I haven't heard that yet.”

TJW: [Additional prompt] Have seen some information about Puget Sound salmon and how they are higher in PCBS than any others.

But the levels are so... they're not anywhere near the EPA threshold, I don't think. Other than that Blackmouth, the King Salmon, they deliberately delay release as a sports fishery. Those people that eat that fish, that catch that fish, they probably shouldn't eat as much. But, by and large, the migratory species that come through... ”

TJW: [Additional prompt] You don't see those as being overly affected?

“Yah, even the old PCB dioxin problems that [unintelligible].”

TJW: [Additional prompt] Provides information about the equation and how it's more complicated than the FCR, explains the proposed changes to the BW, DW, bioaccumulation levels, and cancer risk rate; Inslee press conference; and variances.

“That gives a much better perspective.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“I just don't know. I'm just so unfamiliar with how stringent they are now. Intuitively, as a fisherman, I'd like to see it, but I also feel there are industries that employ people and we don't want to lose them, per say.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State? Or perhaps this isn't applicable as you don't know if there should be higher water quality standards?

“I don't know of another way to do it. It looks like the law and the standards forces the State to do this and I guess I would favor some sort of a tightening of the regulations in a compromising manner, like the Governor is having done.”

TJW: [Additional prompt] So you see his initial proposal as a good thing?

“Yah.”

TJW: [Additional prompt] Discusses authority of EPA and NTA and timeline, draft rule coming out in September, and attached piece through the legislature.

“Well, if this had implications toward stormwater runoff and the big problem that Puget Sound Partnership faces, I would like to see standards enforced. We have standards right now that just aren't enforced.”

TJW: So more focus on that, more enforcement of existing laws?

“Yah, I think that is by far more important than the point source that certain industries would have.”

COMMERCIAL FISHERMAN 2

Background

TJW: What kinds of fish do you specialize in catching?

“Salmon, tuna, used to be crab, I retired from crab about ten years ago. We get some halibut, ling cod and we get some ground fish with the bycatch of our salmon fishery. All ocean. I did a little gillnetting 20 years ago.”

[TJW Additional prompt: So, year round then?]

“Well, when I did crab, it was year round, so I'm semi-retired now.”

TJW: Where do you fish?

“Mainly in this area, but down in Oregon and a few years all the way down to California. Primarily Washington and Oregon, the coast.

TJW: How long have you been a commercial fisherman?

[omitted to protect anonymity]

TJW: How/why did you get into the fish industry?

[omitted to protect anonymity]

TJW: How do you primarily sell your fish? [Prompt] Is it online, retail store, farmer's market, restaurants...?

“The salmon primarily goes to processors, local processors, local buyers who, you know, go on to the next step of distribution. Tuna... well the salmon and the crab, when I did crab, we didn't retail much, but with the tuna about 90% we retail directly to the local market, off the boat, primarily home-canners, that's a big market.”

TJW: What or whom would you say is your biggest market?

“Well, it depends what we're fishing. On salmon, the biggest market is the major buyers, distributors, wholesalers. And tuna is mainly retailer public.”

[TJW: Prompt Would you say mainly from WA?]

“Yah. The retail tuna that's basically all over the northwest, western WA to eastern WA and then northern OR, people come up from Vancouver/Portland area. But on the salmon, the salmon and the crab when I was doing crab, it's all local.”

[TJW Additional prompt: So, in this county?]

“Well, they have facilities, but they are regional operations. Like [local seafood distributor], they have buying plants all up and down the coast, but like [local seafood company], they're pretty much just a single operation down here in [coastal town].”

If in Washington, to which county or counties do you sell the majority of your seafood?

See above.

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

[omitted to protect anonymity]

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a commercial fisherman? What would you say is your top priority?

“Well, the biggest issue by far is having reasonable regulations for our industry that aren't totally influenced by environmental type of groups. I think that the... we're fishing primarily in federal waters, federally regulated by what we call the Magnuson Act, you're probably familiar with. And it calls for sustainable fisheries and we feel, or I feel that the regulators are being pushed by big money, big eco-trust money such as the Moore [?] foundation and the one that is supported by the Walmart, Walton family. They support places like eco-trust and oceana and greenpeace and my feeling is that it has gone way beyond protecting the oceans in a sustainable way and allowing sustainable fisheries. Their goal, the organizations that they support, their primary interest, whether they accept it or not, is to raise money for their organization. They need a poster boy that they can go to the public and solicit funds, so right now one of the big issues, one of the poster boys is forage fish. And you're familiar with the Pacific Fisheries Management Council, in your way, they manage the ocean fisheries and the forage fish are one of the things they manage, like they tightly regulate the amount of the more common forage fish like sardines and squid and they manage it very sustainably and a lot of the environmental community are portraying to the public that we're being irresponsible that we're allowing too much of that fish to be removed from the biomass and it's... I think it is tightly... the federal government is telling us, there are a lot of other examples of that, like the drift gillnet fishery in southern California, they have a sort fish that is very tightly managed, very sustainable, but because they occasionally take a turtle or impact a whale, the

environmental community is... don't bother me with the facts, it's got to be shut down, we got to find another way to do it. Another one is the albacore tuna, that's been a poster boy for the environmentalists saying there's too much mercury in that tuna, you're taking a chance on harming the public by allowing the tuna to be harvested and sold. And the reality of the situation, we have research, I don't know if you've looked into at all, what we find is first of all, the albacore tuna that our west coast fishermen fish are 2 and 3 year old, they are very young fish, they have a pretty small amount of mercury in them to start out with and our research shows that the selenium that is in marine fish combines with the mercury and basically passes it through, it's been a few years ago that there was a study up in Scandinavian countries where they were saying, oh that mercury is killing people and da da da da and the mercury in the fish, and tuna's got a lot of mercury in it and you got a real problem. There's been several studies that have, first of all, the study they referred to not fish to start out with, it was pilot whale meat that they were eating and there's a lot of studies in the Shishelly Islands that shows that people that have a high percent of the marine fish, particularly the tunas, they're one of the most abundant biomasses in the ocean, that the mercury is not negatively affecting. A matter of fact, if people don't eat these marine fish, we have studies, there are studies that show that the IQ or the average intelligence of the children is lower than the kids that do eat this. There's a lot of conflict between the federal drug administration and the EPA, the federal drug administration has one level that's reasonable and the EPA has a more strict level and they're having a hard time..."

[TJW Additional prompt: For mercury levels?]

"Yah, for mercury levels, not even evaluating the selenium portion of it that shows that this mercury in this fish that actually passes through as it combines the selenium and it doesn't really affect. There's a lot of research that's gone on in that and there's more studies coming out it seems like every day, the studies are showing that people are healthier basically, better mental development, kids and adults both, if they eat seafood than if they don't eat seafood. One of the reasons, and this goes back almost 20 years now, the environmental community has been trying to shut down the coal burning, electrical plants, and they're saying the mercury that is put out by these coal plants is falling into the ocean causing high mercury levels and blah blah blah and our view is that it's a poster boy for them to send out solicitation money, just like this situation with the forage fish and the thing with the drift gillnets, they're basically trying to force, and this is big money, this is the Packert foundation, they put out millions of dollars to supposedly save the oceans and restrict the fishing so they just target stuff that's healthy and good for us. You know, they pretend by saying we're just trying to have fisheries for the future, we're not trying to shut fisheries down, but the result of what they're proposing is basically eliminated a lot of healthy fisheries out in the ocean, which I'm obviously really familiar with. Another one of the issues we got is with the endangered species act and the marine mammal act and you know all these things where right now, with the renewal of the Magnuson Act, the fishing industry is trying to get more flexibility in allowing these depressed stocks to rebound or to improve and one of the real problems with the way the Magnuson Act right now is that anytime a biomass reduces it's considered overfished, regardless if due to fish or to environmental thing because you know, you probably studied enough to know there are cycles, you probably see it in the oysters all

the time, it's really obvious in the crab, if you look at the crab, the conditions are just right, with the molt, when they spawn, you get a hell of a crab biomass, but if they aren't, you won't get any, but that doesn't have anything to do with the harvest, but the bottom line is that you're just taking the adult males, you're returning the adult females, there's a loss, but not a significant loss. All these issues, you know, we're really... that's our biggest danger in the fishing industry, this movement by the environmental community under the portrayal of protecting the oceans and it's leading to shutting down the fisheries.”

TJW: Would you say that other commercial fishermen have similar issues?

“Oh, absolutely. Most of us do, that's why we're trying to... the fishing community is united in trying to get more flexibility. Right now, the Magnuson Act says that any depressed stock have to be, they have words for it, technical words for it, for overfishing, I have a hard time explaining the difference, but the bottom line is that any stock is considered in that category is supposed to be recovered in ten years. And the problem we have out here in the West Coast is that some of these stocks, some rockfish stocks, I don't know if you're familiar with the canary rockfish and the yelloweye rockfish, those are two of the more critical ones on the west coast, trawlers get them, you know what a trawler is, the trollers, the recreational fishermen get them, and we're trying to get it where it has to be recovered, we're not denying that, but it doesn't have to be done in ten years. A lot of these fish live for 70, 80 years and they're... how they fast they reproduce isn't fast enough. So we're really pushing with this renewal of the Magnuson Act to get more flexibility in those recovery. Another thing we're really pushing for, because of the public view of this, rather than any time a stock is depressed defined as overfished or overfishing, let's just have it depressed and then look at the fact of whether it's because of environmental conditions or we just don't know or you know, there are a lot of other factors. I'm sure you oyster folks must have similar experiences. And in the Puget Sound, you've got your contamination and whatnot, which is I'm sure an issue for the oyster folks, we need to have clean water down here. The [coastal oyster company] oysters, a guy named [coastal oyster company president] is a real activist down here, you know, we've been worried years for the fecal coliform that's shut us down. A lot of people don't take into account that there's a lot of natural fecal coliform as well that's produced by rotting wood.”

[TJW Additional prompt: I've heard of this, particularly with paper plants]

“It's like the elk river down here, it's right next, you just come into the harbor and elk river is one of the first estuaries, there's no development on it, there's a few houses, very few, and the drainage is out of the hills between here and [coastal town] and it has a high fecal coliform just because of the rotting wood coming out. You know, we do have the history of the pulp mills in the harbor as well, the one in [coastal town] is the only one left now, the one in [coastal town] is shut down. You know there's been abuses in the past if you talk to some of the guys who used to gillnet here in the 50s and 60s, they say they see fish literally gasping on top of the water for oxygen because of the estuary was so polluted with the sewage going into it and the pulp mills.”

[TJW Additional prompt: There was a huge issue with the pulp mills with the oysters in the Canal as they are filter feeders]

“It hasn't been that long ago, four or five years, you had the big die off in there because of...”

[TJW Additional prompt: The DO. They are still figuring out what the exact causes of this, the natural geography and the failing septic tanks. A lot of different factors.]

“We've been involved in the [local] fisheries taskforce for a lot of years, probably 30 years, I just got out of it about six, seven, years ago. We followed these issues and had a lot of discussion on them. It sounds to me, and I've been on advisory group for fish and wildlife and had presentations on it, it sounds to me like most of point sources are pretty well controlled these days. I don't know what you've learned in your experiences.”

[TJW Additional prompt: Well, that's part of what this water quality standards update is about... goes into question about WQS]

TJW: What are some of the other kinds of issues that commercial fishermen in Washington are facing?

NA. See above.

TJW: Have you been affected by fish advisories? If so, how often?

“Not my business, but of course you know about the shellfish toxins. They come in and we got that [unintelligible] in the razor clams. No, I've never been affected by stuff offshore, fortunately I don't think can monitor close enough to know. And, you know, there are a lot of people who have natural reactions, particularly to crab and oysters, histamines is a big thing. Sensitive to histamines.”

TJW: What would you say are your customers' main concerns and questions regarding your fish?

“There was some concern about the, the Japanese nuclear plant going down. There was some, here again, some of the environmental groups were saying, oh the ocean's going to be poisoned out there, you can't eat any fish. There were some articles that came out, some researchers, you probably saw it or heard about it, in California, they caught some bluefin, the bluefin just like the albacore migrate back and forth, and there some trace amounts of the radiation that was specific to there.”

[TJW Additional prompt: That's interesting that they can trace it back to its specific source]

“Because of the type of selenium, 121 or 141 or 172, they can trace it. But the bottom line was that there's more in a banana than what they found, if you were to eat 40 tons in a month, you might get sick from it. I remember when the pulp mills got run out of town here, in my view they got run out of town, got all but shut down that stuff was in their effluent, that they said was lethal to people. They couldn't even measure it, they had to measure something else as a proxy, I don't remember what it was, PCBs? It's been like 15 years ago now, I went to a bunch of meetings? That's what so much of this stuff is based

on. In my view, the environmental groups are looking for a cause and they jump on this stuff and then they can go out and say, look how we're saving you folks. So, be careful.”

[TJW Additional prompt: Laughs and reiterates that it is a complicated topic]

“Like I said, until I see people literally getting sick or some real indication that what we're doing today... and I think a meal a day, I don't think anyone eats a meal a day. I don't eat a meal a day of seafood of fish, do you?”

[TJW Additional prompt: Says that she does, but that's it's an average in that she eats more or less depending on the seasons]

“Well, I'm the same way. A couple meals of a week, yah. But a meal a day, that's a lot of seafood. I don't think we produce enough, but of course now we import 90% of our seafood now.”

[TJW Additional prompt: Discusses how they got the 175 was from tribal studies, talking about range from 175 to 500 grams a day).

“Is this what they eat per day? I would imagine the tribes eat much higher than the average population, much much higher, but here again, I guess we have to protect our Native Americans. But if 90% of our seafood is being imported into the State, how much good is going to be running industry out of the State when less than 20% is actually produced here? We got no control over the rest of it, it's probably a 100 times worse.”

[TJW Additional prompt: Talks to getting a higher price for our seafood if we have higher regulations for water quality.]

“If we could, but it doesn't work out that way, unfortunately.”

[TJW Additional prompt: Continues to talk about this, A plus quality of seafood due to higher water quality standards]

“I'm sort of an example of that. My boy, he's in his late 30s now, but he's been in fish distribution, worked a lot with the regional fish companies and I tried to do almost a 100 percent of my catch locally, regionally. I got real good quality, the whole 9 yards, and he said, dad, people won't pay the price, people just won't pay it. You get a small percentage that will, but any kind of volume, people just go for the dollar and won't pay the additional money.”

[TJW Additional prompt: Discusses working growers/fishers working directly from farm to plate rather than distributors, but that there are different challenges that come with that as well]

“My kid tried that with salmon, and I know a couple other guys that tried it as well. We just didn't have the demand. You can't take a truck and drive it all around Seattle to deliver one product or two products, there just isn't enough money to make it financially feasible. That's where the [large seafood distributor] and the [large seafood distributor] they have the whole smear, they can deliver everything. [Large food distributor], they have the preparation all prepared, they totally supply, well, then instead of driving to a

restaurant and selling 300 dollars, it's 3,000 dollars. Well, you can drive to a restaurant for 3,000, but you can't drive to it for 300."

[TJW Additional prompt: The distribution issues are huge, speaking to issues on the Coast and chefs that have issues getting product, biggest challenge can be economies of scale]

"It's catching on more, if you watch the internet now, there's a few companies that are trying, in the more populous areas, there was one that tried it in the Seattle area, but the last I heard they couldn't make a go of it where they'd have a product a week or a product a month and people would take so many pounds or so many dollars worth and then every month they'd get it delivered. You know, you'd think it would work, it's just..."

[TJW Additional prompt: Like a co-op situation?]

"Like the co-op. When crab's, you'll run three weeks or four weeks, bring you crab, 25 crab a week or something like that, then it goes into oysters for winter time or spring time, March, April, when oysters are really good. And then it'll go into salmon during the summer, that was what the model was. It just didn't work. Apparently it didn't work because I don't hear them around anymore."

[TJW Additional prompt: That's too bad, hopefully they can explore that again. It's hard to know if it was due to the business model or the people running it]

"That's a hard one too. A lot of the big corporations now are trying home deliveries in the metropolitan [areas], even Costco, not Costco, Walmart is trying it now. At least that's what I see on the internet, where you can order so much. You can't out here, but in the urban areas where they have so much stuff delivered every week supposedly."

[TJW [Optional]: What are your views/experiences toward/with state regulation?

NA. See above.

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

"Yah, yah yah, I heard about it. And I'm really scratching my head. You know, you look at all the cars and where's all the drainage from I-5 going? Right into the estuary, that's a big deal. But I know like Boeing and outfits like them are pretty tightly controlled this day and age. Particularly the smaller companies that don't have the prestige of the Boeing, the State and EPA people come in there, both federal and state and if you have a little chlorine spill down here at [local seafood company], they got a freezer plant, it's just terrible, they almost crucify them. I don't know if you use many chemicals in the oyster industry, I don't know about up there, but down here we got the ghost shrimp and they wanted to spray some chemicals to kill the ghost shrimp. So, it's all tightly controlled, supposedly you have to have a multitude of studies and whatnot to show that you're not killing everything in the environment, it's just specific to what you're trying to control."

The old day and age of being able to spray anything, you do that this day and age, you'll end up in jail, literally. So, I, well, this deal where they're saying well people are eating more fish now, they're going to get... it's hard for me to accept."

TJW: If yes, how did you hear about this update?

"Yah, actually, it was in the paper, and then it was on the news. I watch the news every night. It was on the news and there was some local talk shows were talking about it, they didn't even know, what's this all about, as far as a lot of people don't understand to start out with. Here again, we've been through legislature, the WA state legislature, we been through it federally, environmental groups will jump on one of these issues. The good one was a few years ago, was something in the fire retardants, the chemicals. It was something similar to that, I've been involved in the politics of that. We had a guy here who just retired here, who was sort of our industry lobbyist up in Olympia. And I don't remember what the chemical was, but the environmental community wanted to come in and say we got to get this banned, I think it was the one that was in baby bottles or something. But anyway, the environmental community wanted us to jump on board to get this stuff banned and our lobbyist up in Olympia called me and said, hey, do you know that stuff's in salmon naturally? You realize that if this were to go through, you wouldn't be able to sell salmon in this state? But the environmental community, they totally ignore that. They just want you to jump on board, these causes and these issues, and they can send solicitations out and collect donations and say, look what we're doing to save the world. I have a real problem. Just another little example, I just think this stuff has gone too astray. City of [coastal city] lived over a hundred years on the water coming out of the reservoir up at the [local river]. The federal government came in and said that's not good enough, that water's not good enough, you have to go to an osmosis process to filter that water before it can go into the city. Nobody had ever gotten sick on it! But anyway, to finish my story, the water rates for the [local city] went from like 12 to 15 up to 35 dollars a month? Why? This stuff is just getting so out of hand. You got ebola now, let's do some stuff about that, that's killing people. But this other stuff is just ludicrous. I have a big problem with this 303 standards for temperature in the water. I think they're just way out of line. The [local river] is a good example: "well, the [local river] is too warm, it does fall under, it doesn't [meet] the 303 standards." What's your proof? I think it's always been that warm. And we got salmon runs coming, we have one of the best natural salmon runs, particularly coho salmon, yah it goes up and down, but it naturally goes up and down. Fish aren't all dying in the sides. I know there's a lot of the streams that supposedly don't qualify because of the temperature 303 standards. This idea of bringing back the streams, like in King County, like they were before man was here? Give me a break, it ain't gonna happen. I'm a little prejudiced."

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

"Well, what I understand is because they say people are eating more salmon, or more seafood or more fish, because that could come out of a lake or saltwater, either one, then they're getting percent of these contaminants and it's affecting their general health. That's why we have to make sure we get it removed from... Is that it?"

[TJW Additional prompt: Discusses this further]

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

“So, have you, you’re doing your master’s, you must have done a lot of evaluation on this?”

[TJW Additional prompt: Discusses some of the research done]

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“I don’t know. Based on, number one, I look around the state. From what I understand, our life longevity is increasing. They really don’t know what causes cancer. What you’re talking about is something, we want to have jobs for our people. Every time you put another regulation on our industry, it goes overseas. They don’t have that kind of... Is it really necessary in my mind? I can’t really see any justification for it. But, I haven’t studied it like you have.”

[TJW Additional prompt: Yes, but you’ve been a fisherman all your life, which is why I’m interested in your opinion]

“I like fish, I eat fish. Out in the ocean is probably a little safer than quote, in the Puget Sound. You know, I’ve always considered myself a statesman, rather than someone who’s just parochial for what they do. Some people are, no matter what, well if it’s going to affect fishing, then I’m against it. Well, I’m against it too, IF there’s justification for it. But if I can’t see justification in my mind, then I’m not going to be the cause leader, you know rally the troops, and say hell with this no matter what. I want to see if, in fact, I feel our... I’m very upset that, in my view again, a lot of the environmental community has forced a lot of our jobs and opportunities overseas. I think one of the most ridiculous things in the world, getting back to this coal thing, where they’re putting mercury in the air. The coal that we burn in this country is probably cleaner than anyplace else in the world, we have the biggest coal reserves in the world, we’re digging coal, we’re transporting it over to Asia, Asia’s probably burning it the dirtiest in the world, and guess where the particulates are coming? They’re getting rained right at [us]. And it’s probably one of the cheapest sources of energy, outside of the hydro, hydro’s the cheapest by far, but the stuff that you have produce away from the river, it’s probably the cheapest. We should be doing it here and taking advantage. But we’re not, we’re worried about loading on to ships in our harbors and dumps and derailings and we should be setting up our energy production right around the coal mines. So, anyway, that’s why I feel the way I do. Now you tell me, what’s your idea?”

[TJW Additional prompt: Discusses view and research about it being a bare minimum for toxics. And that there are many other issues, such as stormwater]

“So, you’re going to run all the jobs out of the country, just as a precautionary. Let’s run them over to Taiwan and Indonesia and Bangladesh. That’s what it leads to.”

[TJW Additional prompt: Continues to discuss draft rule, cost benefit analysis, and variances, no industries’ permits affected at this point]

“Well, not immediately, but down the road. But they’re gonna have deadlines down the road and just like they had to shut down the coal mine in [local city], because they couldn’t meet the steps. Well, it won’t affect you for 20 years, and 20 years later, well we still can’t do, well sorry you’re going to have to shut down.”

[TJW Additional prompt: Agrees they don’t want to run business out of the state. Tribes are fishermen as well. A lot of different opinions. Discusses opinion that toxic chemicals are toxic and we should be putting less of them in the water]

“But you know, people need some of these chemicals, like boron and selenium. If you don’t have it... If you talk to any farmers, they put selenium and some of these other chemicals, well salt, salt will kill you.”

[TJW Additional prompt: Discusses special rules for certain chemicals, like arsenic. Actual data in draft rule out by Inslee].

“Inslee’s a dunce. You’re probably one of the people who voted for him. I’m telling you, if anyone could still vote for Inslee, I’m just...”

[TJW Additional prompt: Laughs and says no, but goes back to this affecting fish and shellfish industries, my generation is more and more concerned with what’s in food, more testing]

“But you’ll go down and buy shrimp in the local market that’s raised in the swamp of China, the sewers of China.”

[TJW Additional prompt: Thinks that more focus on local and sustainable, and not wanting the larger industries to limit the fish and shellfish industries].

“I’d like to see real evidence that what we’re doing now is hurting people, that’s what I’d like to see. If you could show me that, I’d be 100 percent with you. But I haven’t seen it. Even they advised the people not to eat the bottom fresh in Elliot Bay because of all the pollution.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

NA. Didn't ask.

At conclusion of interview:

“I hope I put some caution in your brain because it's you who's going to be making these decisions down the road.”

COMMERCIAL FISHERMAN 3

Background

TJW: What kinds of fish do you specialize in catching?

“Salmon, we do get incidental halibut and albacore tuna.”

TJW: Where do you fish?

“In Washington, it's all here.

[TJW Additional prompt: Is that unusual? I feel like some of the people I've talked to will also go to Alaska]

“It is. There's an amount that fish strictly Washington. Almost all of those are a Puget Sound market, to some extent.”

“It's all off the coast, we mostly fish out [Strait of Juan de Fuca city]. We have to south of Ozette because of the Puget Sound Endangered Species Act, so the commercial non-tribal trollers are the only ones who have to do that. Everyone else can fish in the mouth of the straights. But the non-tribal guys have to go all the way down to Ozette and out about 20 miles around Cape Flattery. Even though we're the lowest impacting group.”

TJW: How do you primarily fish? What is your method?

“It's a troll caught.”

TJW: How long have you been a commercial fisherman? How/why did you get into the fish industry?

[omitted to protect anonymity]

TJW: How do you primarily sell your fish? [Prompt] Is it online, retail store, farmer's market, restaurants...?

“It's all cleaned, so probably two thirds goes to a buyer on the coast. One third I self market in Seattle. And all the tuna is self-marketed in Seattle. I do an email blast and have clients on email. And I've got a list maybe now that is 300 clients and a couple restaurants. And I send a blast out to say, hey we're going and this is what we'll have this year and I get emails saying, this is what I want. It's kindof like ordering your beef for the winter ahead of time.”

[TJW Additional prompt: This is what my family does, we can tuna from the coast each year]

“And I have people who do that and they get it up here.”

[TJW Additional prompt: We generally do 4 or 500 pounds between a couple families]

“One guy got 900 pounds this year. He wanted more, but I had to cut him off because I didn't have enough.”

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international? If in Washington, to which county or counties do you sell the majority of your seafood?

“The biggest market is [local seafood company in Strait of Juan de Fuca city]. In the spring time, we're wide open. It's all quota driven, but there are no weekly catch limits and so, at that point, I just stay out there and sell to them and that's where the bulk of the fish to. About 1/3 is self-marketed and 2/3rds probably sold to the fish market.”

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

[omitted to protect anonymity]

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a commercial fisherman? What would you say is your top priority?

“As far as major issues is that the politics drive the fishery, not the biology. It's all politically driven.”

[TJW Additional prompt: In terms of what the harvest levels are?]

“Who gets to harvest what, when, where, and who has the most political clout to say yay or nay.”

[TJW Additional prompt: And you'd say this is your top priority?]

“In this state, I don't see how you could fix it. The co-management system is kinda broken.”

[TJW Additional prompt: What kind of revisions do you think are necessary?]

“I think if everyone went for biological reasons only, we really saw that this year with [trails off].”

[TJW Additional prompt: What might be some of your other priorities and concerns?]

“Also, the salmon restoration, how politics can also drive that.”

[TJW Additional prompt: In terms of what gets restored?]

“What gets restored, where the money goes. For instance, City of Seattle putting millions of dollars into the creek down here. The real issue is the water quality from the runoff, so 95%, this is numbers from NMFS research, 95% of returning adult coho die in [unintelligible] creek before they ever lay their eggs. So, you can put all this money into there, put all this fish in there, but it's not going to do anything. But, you take the same

money out and put it into a place in the Snoqualmie Valley and it'll do a lot. So there's not this prioritization of okay, what's the best bang for the buck, what's going to boost the most fish in a natural system. And is it cost effective, are we going to get a return from our dollar? In the way this state does, they divvy up restoration money on a state wide basis and we can do a lot better? I know with the SRFB, they try to prioritize it, but then you look at, because salmon's a big buzzword, everyone's got to jump in the ballgame. And while City of Seattle might be putting up a lot of those funds, can we do better with that money?"

TJW: Would you say that other commercial fishermen have similar issues?

"Probably different because I don't think a lot of them have dealt with politics and biology of the fish so much."

TJW: What are some of the other kinds of issues that commercial fishermen in Washington are facing?

"Politics, I think most of them have the politics, how you set quotas, how do you harvest the quotas, stuff like that. And I think you should remember that almost all fisherman still have the buffalo hunter mentality."

[TJW Additional prompt: Like drive to extinction?]

"Not drive to extinction, they don't want to drive to extinction, but we know we have a set quota, let's get them as fast as we can. Is that the best economic use of that fish, maybe not."

[TJW Additional prompt: Going back to how the markets are structured?]

"And if you're supplying local markets in Seattle, restaurants don't want them all at once, they don't want the fish for one week and that's it. They want them throughout the season to get a nice steady supply, they can depend on it, we can depend on them. If you can't have that, you can't sell sustainable local seafood."

TJW: Have you been affected by fish advisories? If so, how often?

Didn't ask [question has become moot].

TJW: What would you say are your customers' main concerns and questions regarding your fish?

"And this is going to something interesting that Puget Sound people don't have to think about, but some of the questions I got this year about the Fukushima radiation. I lost one client that refused to buy salmon, and he had a PhD in veterinary science. He should have known better that we tested, the Canadians are testing, that it's not showing up here. Also mercury, I have people who worry about mercury in tuna, so I've been able to supply them with reports about the age of classification, what is the mercury concentration and for eastern pacific tuna's, albacore tuna's not really an issue. Western pacific tuna, that's where they migrate to winter [unintelligible], the long line tuna, the canned tuna, that you see all the reports on, that's an issue."

[TJW Additional prompt: That must be nice to be able to provide technical information that other commercial fishermen might not have access to]

“They don't always believe it.”

TJW: [Optional]: What are your views/experiences toward/with state regulation?

NA.

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“They want to raise them. And I think in shellfish it's more an issue, because for our salmon, we don't catch them before they return back in here, so depending on how big they were when they smolted out, probably 99% of their weight was put on in the ocean, so pretty clean natural food. So, it's not a huge issue for us as trollers, and then while the tribal terminal fishery fish do get caught in Puget Sound, they're not eating anymore. They've stopped eating once they come past the Straits. So, they're not ingesting. So you only get most of the chemicals by ingesting in bioaccumulating.”

[TJW Additional prompt: Rather than just pure exposure?]

“There's some of that you can get, but you have to have a lot to get absorbed.”

TJW: If yes, how did you hear about this update?

“Been watching the paper, I know that Boeing isn't happy.”

[TJW Additional prompt: Is that what you remember from that?]

“That's one of the things, big industry.”

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate? Additional prompt: Boeing not being happy is what you remember?

“Yah, it surprises me what they put out, but it must be in their paints.”

TJW: Do you agree?

See below.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

See below.

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“No, I think really for... you'd have to test, really do a lot of testing. I know that PNNL did a lot of background core samples in the Puget Sound all through the 70s, that data's all there, Metro's doing it now. In King County, their DOE is doing it too. The other thing to remember is that... so, chemistry has evolved in the last twenty years such that we can detect things of magnitude better than most analysis than we could twenty, thirty years ago. So, we're seeing stuff now that may have been there before, but we just couldn't see it.”

[TJW Additional prompt: So, what kind of testing needs to be done to get the data you think you'd need to see to determine whether higher water quality standards are needed?]

“I haven't taken a position on that because I haven't really looked at the data. Being that my background is chemistry, I'm not going to come out and say that the sky is falling with really looking at it. Now that's also comes from that for my fishery, it's not really an issue. There's other issues that are limiting to salmon, upland deforestation, water temperature, stuff like that, which I consider pollution too. Turbidity is a big issue, but the values of turbidity that you'd want to deal with in water quality are almost not attainable in the modern world, logging, road construction, farming, you just can't get there. Because that basically means that everybody's gone. Now if you look at the Quinault River, you can have five or six inches of rain and it runs crystal clear. You do that on any river around here and you know what it runs like.”

[TJW Additional prompt: So, you see that, the population pressures, as higher priorities in regards to water quality?]

“For my fishery.”

[TJW Additional prompt: But maybe not for Puget Sound?]

“Now, for Puget Sound, where you're drawing tons and tons of bivalves that are filter feeding, that's another issue. And as we start detecting more and more stuff, and if it getting higher and higher, then that's an issue. So, then there's also a lot of people [that] freak out about there's mercury in the fish. Well, mercury's a natural element, it is in the ocean naturally, so we see it naturally. So then you have pulp mills that can also burn it, so you got to be careful when you talk about sometimes with pollution, what you measure it.”

[TJW Additional prompt: Same thing as arsenic perhaps?]

“Yes, it is same thing as arsenic.”

[TJW Additional prompt: So, then there might be higher water quality standards needed for Puget Sound in terms of the bivalves, in terms of the shellfish?]

“Yah, in areas that they're wrong, like Hood Canal, that'd be one that I'd really want to check as it has such a reputation.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Industry. I see one of the barriers to a lot of restoration being right wing, what I would call right wing propaganda. It's getting to where you can't look at the science. If you could just look at the science, that'd be one thing, but you can't. In this day and age with blogs, tweets, texts, whatever, stuff just on the internet. How much stuff do you know that people put on the internet and say, oh look at this, can you believe this, and it's so falsified. So, you have that whole issue to deal with.”

[TJW Additional prompt: So misinformation?]

“Misinformation. I think that's probably the biggest issue.”

[TJW Additional prompt: So the public, or even Ecology, not understanding what is the factual truth?]

“That's it. So, you're going to get someone who doesn't have a very good science background, doesn't understand the facts, reads something on the internet and goes crazy with it. And they have basically the ability today to the put that information out to a million people within an hour. And the problem is so many of them believe it. So, to me, that's the biggest problem.”

ORGANIZATION 1

Background

TJW: When was your organization founded?

“Oh gosh, um, over 80 years ago.”

[omitted to protect anonymity]

[TJW Additional prompt: I've heard that some people have hatcheries there]

“Well, it's part of that. [Two shellfish companies] all have infrastructure over there. But the state department of health, whatever their real name is there, is starting to get waters to open up for shellfish cultivation, oysters, and I think clams maybe.”

[TJW Additional prompt: Less susceptible for ocean acidification in Hawaii?]

“For the hatcheries, yes, they were not seeing the volatility in the conditions because they are nice really deep source of water.”

TJW: Why was this organization founded? What would you say is the primary purpose for your organization?

“I think that the easy answer is that it is a group that's wanting to be sure that this industry can continue into the future. Working on all sorts of issues in terms of water quality, training for new families who want to get into shellfish culture, making sure that agencies are aware of the value and permitting process doesn't stifle growth. Education for our

members and for others. Research, we'll sponsor research that will help ensure that the industry sticks around.”

TJW: How big is your organization (how many businesses/organizations would you say that you represent)?

“We have about 150 grower members, so companies, of that those companies range from very small mom and pop kind of 2 or 3 person outfits to very large companies such as [provides examples]. And [shellfish company] is one of our members as well. Well, they have been for a while, but they have a bigger role now. In addition to the grower members, we have probably another 40 or 50 allied members, these are people somehow, people and businesses that support shellfish somehow, maybe they make the netting or do some of the shipping, make boxes, those members are supportive of our industry.”

TJW: How many or what percentage of your member businesses are in Washington?

“About 80. The majority are in Washington and the majority are small.

[TJW Additional prompt: The one to two people or under 10 people businesses?]

“Yes.”

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?

NA. Didn't ask.

TJW: Is this a family business?

NA. Didn't ask.

Broader Seafood Landscape

TJW: What are some of the main concerns and priorities you are dealing with in advocating for shellfish growers?

“The number one issue is permitting. We've had an issue where we are nowhere meeting the demand for our shellfish. We know we could be capable of doing that but we have not seen the required amount of expansion necessary to do that. We don't have hard numbers on how far we are from what the market demand is, but we know that many of our members have said that they could easily sell two or three times more than what they are producing. So the number 1 is getting that out there. And getting the regulatory climate..., not that we don't want regulations, we need it because we need to have environment that would grows shellfish, because shellfish doesn't grow everywhere. It's got to have clean water, it's got to have good substrate, it's got to have all these, salinity. We know it can't grow everywhere and where it can grow, we'd like to make sure it can be permitted there. That's probably number one. Education plays a role in that, both in terms of, everything from are there impacts from growing shellfish, what is that, how do we educate people on understanding what those are, what they're not, all the way down to 'how do you cook a geoduck??' You know, you want me to eat this, now what, huh? So, that level of

education, making sure people understand that. Water quality is a really big one. And maybe that's probably second. And maybe it's sort of protecting the conditions in which shellfish grows, maybe if I put that umbrella – that's everything from making sure that there's not runoff coming down there, or making sure that there isn't any other species that's impacting the ability to grow shellfish. So, I think that would be my number two. Education is probably three, although it fits into those. Um, markets and being able to move the shellfish would maybe be number four.”

[TJW: Would that include the China Ban? I was talking with Commission bio about that and he was giving me an update. How were you involved at all? Did you have a lot of relations with China?]

“Not with China. China only wanted to talk to the federal agencies. But we definitely involved working with the DC delegation making sure that they were aware of where we were and trying to push the agencies to move in terms of correspondence and getting information back to us. We're definitely working with Department of Health, who is the shellfish authority, making sure that the monitoring protocol makes sense, and also now traceability issue. Making sure that we are clear where the product is coming from and if it's being co-mingled. We are learning there is a big difference between how some of these components accumulate in farmed product versus the natural wild product. We think essentially, we think what it's going to boil down to, we're trying to get a handle on this is the age of the animal. Possibly also the location in which the animal has grown up. But right now, we know that the average age of a farmed geoduck is six years, five to seven years, so six years and the average age of a wild geoduck is over 20. And the numbers of PSP levels, for example, are coming up way higher in wild than... [farmed].”

[TJW: Arsenic as well? Or just the PSP?]

“Yah, it looks like both of them... So another one of our priorities, I don't know where it fits in, is sort of the human health safety. Public health. Consumption, eating product, making sure we spend a lot of time with an outfit called the ISSC, are you familiar with that?, Interstate Shellfish Sanitation Conference. [NWIFC shellfish bio] knows it inside and out, I think he was around when they started it. He's a really good resource. But basically, the ISSC is the suite of laws that one needs to follow in order to move shellfish from one state to another. So, the shellfish you eat in Las Vegas, all is compliant with with the ISSC regulations.”

[TJW: I thought that this under the NSSP? All related?]

“It is. Yes, [it is related]. The conference holds the National Shellfish... Yes. The NSSP is it. So, that's a big priority for us. And it's not a conference like go to breakfast and then have a plan area and then do this. Basically, the conference is the suite of shellfish producing states and a number of representative non-shellfish producing shellfish states and they get together and they consider changes. It will be every year. It has been every other year. And there's a whole governing body to that. In this sense, the conference is the whole body, not just a visit to San Antonio.

And it's really funny, when we go down to California, because California hasn't been able to participate in this, and the people that staff say, when we send the paperwork through for travel to go to the ISSC, they see the word conference and they say, you don't need to go to a conference. And it's like, nooooo!!!”

[TJW: So, a lot of that you said is on fish consumption and safety?]

“Well, it's making sure that we know when, you know, the harvest outside of the vibrio season, the time to temperature, when the shellfish gets off the farm, does it get cooled, does it get cooled to what, how do we know it's going to stay cool all the way to the restaurant or to the store or to the next person who buys it. So, it's the whole suite of that. How do things get tested? The Department of Health in Washington needs to be held to the same standard as the Department of Health in Massachusetts. [Unintelligible] So, the federal FDA is part of this and there's a federal limit or standard, states can exceed that but they can't go below. So, other states can say, okay wait, we're going to test it this...”

[TJW Additional prompt: In terms of Washington, are they right at the level that the FDA requires or do we exceed that?]

“I think that we... Washington is seen as a model program in some ways. We are definitely looking more at the risk per serving piece, how much are we... what is our production number, rather than just sort of have a number of saying you can have this much risk per serving, that may not be based on the number of servings available. There are some changes that are going on. The folks at the Department of Health could probably... [tell you more].”

[TJW Additional prompt: So they are part of this process as well?]

“Oh yah.”

TJW: What would you say is your top priority?

NA. Already answered above.

TJW: Would you say that your main concerns and priorities vary by state and region?

“Um... there would be a little bit of variation. Um, there would be a little bit of... permitting may not be. I may not put permitting number one in Oregon.”

[TJW Additional prompt: I know that sometime with the permitting, I don't want words in your mouth, but in talking to others it can be an education issue]

“Right, true, yes.”

[TJW Additional prompt: In terms of not always seeing the benefit of the shellfish, is there not as much of the culture in Oregon, as in anti-geoduck?]

“I guess I would, I don't know why, maybe I shouldn't be picking on Oregon. Like Alaska, I think they certainly would permit areas and could go through pre-permitting and all of this. But Alaska has some other issues. Like they can't get the product out in

time. So there is an issue of transportation. But if I were to say the priority for the whole one... maybe, maybe because there is there is some variety there, maybe it is sort of this making sure that it is a clean reliable supply of shellfish. There's shades [of variation].”

[TJW Additional prompt: But the list was probably more Washington-specific?]

“I think that list could be applied in every state. But you might get a little... they might somehow fall into a different order. While some things might be blaring red and others might be rose pink.”

[TJW Additional prompt: That makes sense. I just wanted to see if there was a variation in priorities for different states. Whether it's harder to get through regulation here than other states or whether it's more a focus on clean product here. It seems to be that it's a huge focus.]

“And that not to say that our product is dirty, I think that it's just something that we always think about. Like our growers spend a lot of time making sure that their plants are up to standard and that their processes are up to standards. And if they are making any investments, it's probably, 9 times out of 10 to add refrigeration or to add some other thing that's going to relate to the NSSP. Um, we have some other things are not that high a priority. Like, just dealing with staff and immigration and succession planning. Something else I was going.... oh, like in Oregon, they want to add more areas, but they are somewhat limited by the fact that their Health department hasn't been able to, doesn't have the resources to actually go and test for an area and do the required monitoring under the NSSP to open that area.”

[TJW Additional prompt: So they have a capacity issue in terms of not having the staffing?]

“Or the funding. So, I think that if that area were to magically open, I don't know necessarily if permitting would be as cumbersome as it might be here. And we see also in the other states, in Virginia and Maryland, that permitting is really easy. It's 30 days and 300 bucks and wham-o you have your permit.”

[TJW Additional prompt: How long does it take to open up a new growing area or beach for permitting sake, for permitting sake?]

“Well [not for a growing area, but] for a beach, a farm, a beach, we tell people it will be hundreds of thousands of dollars and years.”

[TJW Additional prompt: So basically unless people have a farm that they are currently working on right now? Is it just use what you have? Is that part of the issue for the people that are saying that they could grow two or three times as much, they can't get the beach open?]

“And if I have this farm right here and I already own this piece of land here [right next to it], I may not be able to just do all the same species and methods, I can't just transfer it over, I have to do a whole new survey, whole new documentation on what that would be, which really? It's the same. That's one of the things we're looking at. And in Washington,

I don't know if this is known to you, but the reason why we have so much shellfish cultivation in Washington is because Washington has quite a bit of its tidelands that are privately owned. So that makes a big difference and that some of those lands when they were sold from the state came with the you shall use this land as tidelands."

TJW: What type of involvement does or has your organization had in affecting shellfish and/or environmental regulations? [recorder malfunction with this question – written notes and from memory]

"We are very involved in various facets of permitting. Shellfish growers are subject to Nationwide permitting, under the Army Corps of Engineers ESA. There is also the State regulations and county shoreline master plans, which can have a large effect on where you can cultivate shellfish. We have also been involved in oil spill regulations, the no-discharge zone issues, advancing ocean acidification research."

TJW: What would you say are your Washington shellfish growers' major issues and top priorities? [recorder malfunction with this question – written notes and from memory]

"Probably permitting."

TJW: Would you say that other shellfish growers associations have similar issues, concerns, and priorities to yours? [recorder malfunction with this question – written notes and from memory]

"Yes and no. They have some of the same issues that we do and then there are issues that are specific to their region. The gulf coast has had issues with the oil spill. They also are starting to use seed stock when they previously were able to have almost exclusively natural production."

*[TJW Additional prompt: is this because of the oil spill or because of overharvesting?]
[Recorder back on]*

"I don't know. I'm not going to touch that."

TJW: What are some of the other kinds of issues that other shellfish growers associations are facing?

"On the east coast, permitting it's a nightmare, specifically in Connecticut. There is a huge emphasis on ocean acidification in Maine as they've been particularly hit. The east coast has been concentrating on getting the EU open for market, that's been a huge issue. Something that we do have [goes and gets binder from office] - [we] did a code of practices. The research for how things interact. It goes into practices. Management plans for the farms. Then I thought there was a section at the end where they have specific things when you are dealing with this type of method, you want to be careful about where you put your fuel for your boat. Best methods."

Water Quality Standards and Fish Consumption Rate Awareness and Perception

"I've been postponing this..."

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

"I do. But, you're not going to test me on this though?"

TJW: If yes, how did you hear about this update?

"I think I was asked to participate in a discussion about... what... how did I get asked about this? I did a talk somewhere at the University of Washington, gosh probably about two years ago, maybe or a year and a half ago. One of my board members brought it up as something we might need to be paying attention to and soon after that got a call to serve on a panel. And was I think, [the organization] was invited to participate in the workgroup or the roundtable, I think it's called. So [board member] serves that role and has been engaged in all of the discussions. I'm going to wait until you ask the next question before I put myself in a hole."

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate? [Further prompt – You said that you were a part of panel, and that a board member first told you that you should be aware of this. How was it first framed to you and what were your guys' thoughts?]

"Hysteria. No one will want to eat our shellfish because the information is showing that it is not healthy to eat. That the serving sizes need to change because if you eat what is being said is the serving size, you will be become very ill."

[TJW Additional prompt: That's what the board member said to you?]

"No, I think it was... they didn't say it like that. But that's what I remember, people were like, oh my God. It's an attack on shellfish or on fish from our waters. And then that moved to realizing that some of the major industries in the state were pushing to not have water quality standards change because they were going to be EXTREMELY difficult to meet and I think that some of our people may have sort of grown sympathetic to that. We probably, because of that, we probably got a little bit sideways with the tribes... and... you know, I think our main concern was, we don't want it to be perceived as no one should eat Washington State shellfish."

[TJW Additional prompt: So this was your first reaction?]

"When everything was sort of thrown out there, it was like... so we worked with Ecology to sort of make sure that the messages were not 'this is not safe', not that it was not safe."

[TJW Additional prompt: So you worked with Ecology through the roundtable processes to make sure that that was heard, to make sure that this was not the message that was going out?]

"Mmhhh. And the other issue, you know, one of the issues that we have, it's kind of hard to talk, to put the shellfish in with the, in the same pot, if you will, as the fish that move around. Because we know when we plant oysters in [a certain inlet], they're not moving from [that] inlet on their own, and when they do move, we know that they are

moving and they have to be tagged appropriately under the ISSC stuff. So, if the oyster were to be born there and then move out into the great world, pick up all sorts of stuff and exposure and then come back, that would be a different situation. But our oysters stay where they are. Our clams stay where they are. Our geoduck, they would love to be able to move, but they don't, they stay where they are. So, the idea is that, it became a little bit, in my mind, a least a lit bit daunting to think about how shellfish were going to fit into this because we were talking a little bit about apples and cantelopes. The exposure that oysters get we can identify from where that's coming as opposed to going and hanging out by a nuclear reactor in Japan for six months and making its way back here. And we also know the term of what these shellfish are. You know, there's six years for geoduck, two year for oysters."

[TJW Additional prompt: You were thinking about the mass amount testing you do in your site and that was the protection within that and you know the point sources that in your area, as that's a large part of the sanitation survey that gets done.]

"Exactly and with all of that, it became a little like, ugh, it's not the same."

[TJW Additional prompt: So, was it difficult to engage in this topic because it felt as though being put into the same category? It's being called the fish consumption rate, what that hard to identify with or did you not want to identify with that?]

"I think it was little bit hard. I mean, we want to be considered fish, part of that category. I think that some of the general statements were a little bit hard to get your head around."

Do you agree? [Ecology said that fish consumption rate needing to be updated, was that something you agreed with? TJW provided information re: 6.5 versus 175 and Inslee's press conference]

"To go from six to a 100 seems, that seems pretty severe."

[TJW Additional prompt: You think that's too much?]

"That's basically saying that the water quality needs to be good enough so that if I ate 175 grams a day of shellfish, I would have no exposure whatsoever?"

[TJW Additional prompt: No, explains cancer risk rate, explaining that 1 in a million is basically zero and this is our current rate and the proposal from last week raising to 175 grams, but increasing risk of cancer to 1 in 100,000.]

"So, they're reducing that quite a bit."

[TJW Additional prompt: Yes, it's basically saying 17.5 grams a day if you're changing the decimal points around. 175 is what they are proposing, but it's a different cancer rate and saying that it came from industry, saying it would be too difficult to meet]

"And industries such as?"

[TJW Additional prompt: AWB has been a main voice in this debate, Boeing behind the scenes. Also Inslee is looking to connect it to the legislature and focusing on non-point

source pollution, which is great, but is asking EPA to wait a little bit longer to let Inslee pass something through the legislature and then he'll put this draft rule in place.]

“Passing through the legislature, what would that be?”

[TJW Additional prompt: It's unknown right now, reaction from tribes and environmental groups has not been positive. Rather than waiting for the legislature to pass or not pass an unknown rule, tribes and environmental groups are saying, let's put a rule in place. What Inslee proposed was to put out the rule for comment at the end of September (draft rule) with a six month commenting period and put something through the legislature and have this as a suite to give to the EPA. A lot of discussion right now about specific carcinogens and how 30% would have gone up, Inslee said no backsliding, keep at current rate, which is 6.5 at 10 to the minus 6. 70% are supposed to lower, conversation about how much it's going to lower versus one in a million. It's switched to fish consumption to cancer risk rate.]

“How close to reality is the 175 grams a day?”

[TJW Additional prompt: What they are using is a lot of tribal fish data, they are looking at this as needing to be protective of vulnerable populations – so if you look at Suquamish, they're at 500, Squaxin was at 200. The 175 was the basement. Tribes came in and said, this is what Oregon put into place. Some tribes are right below this, some were high above this. A lot of this was based on Oregon, which interestingly used a lot of Washington data as they didn't have their own studies, based it on CRITFC / Columbia river tribes.]

“Yah, I guess one of the things that stood out to me in the beginning is, how do we know that the fish that we're eating is really the fish that is swimming in Puget Sound. I know that for the tribes, that makes a lot of sense, but we hear all the time that we have this 80 billion dollar seafood trade deficit and I can go to any store right now and see fish from Vietnam and China and Indonesia and India.”

[TJW Additional prompt: In other words, you're not sure how much Washingtonians are eating Washington seafood? Should that influence the water quality standards here?]

“That's a hard question. I don't know... [sigh] I don't know. I means it's no different than asking well should we base this on what Oregon said because that's what Oregon said. I don't know.”

[TJW Additional prompt: What would you think is something that would be realistic? (long pause) And maybe that's not a question to ask?]

“I don't know. Maybe I would put it closer to... Just thinking about... I know they want to hit the highest consumption population. I guess that's what they do. But I don't know how many other considerations are actually written that way, are written that way, [how many] policies and laws are really for those highest risk populations. I don't know.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“I think that there is... we should always be looking rig... we should be checking in on it regularly. Looking to see how water quality might be changing... we do need to check in to it often. And if it needs to change, we need to be changing it. I just don't know if it should be based upon what people are eating or how much one small group is eating and if we can extrapolate that for the entire population. It seems a little harsh. Cause this is an average, this is based on... do we know what the average is?”

[TJW Additional prompt: I don't believe there's been a study on what the average of Washington state is.]

“Because that would be interesting to see where that really falls. I get it, within that highest risk population, which the tribes, there's anywhere from 500 to 170 to you know. But, averaging that out, yah, mmm.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Barrier meaning?”

[TJW Additional prompt: Barriers to implement water quality standards]

“Yah, I think the big industrial polluters is the barrier. It's the number one barrier. We have some huge companies that carry a lot of weight in this state and God forbid that you do something that is going to make Boeing weak in the knees.”

TJW: What do you see as the role of your organization, if any, in advocating for higher water quality standards? Specific to the water quality standards update.

“I think we have a role, we need to understand them, we need to understand how they would play out and I think we need to be available as a... let's see, what's not... we can't really... Yah, I don't know, it's a tough one because we are a group of individuals and I don't know where the individuals are going to fall on this. Water quality is a priority for us. Making sure that entities within the State of Washington meet that water quality is important to us. And I think that we need to be able to confidently, you know, advocate for water quality. Mmmm. It just gets really tricky because we have so many relationships, not with Boeing, but with AWB and then that just become hard when you have some members that are lock, stock, barrel with AWB and others who... [long pause] and you have... I don't know... I don't know... I don't know what our role is. We participate and we try to make sure that it's a realistic request based on realistic data and it's implemented in a way that doesn't harm people and doesn't harm the reputation of our shellfish. I don't really like these questions anymore. It's so hard.

I have a board of [omitted to protect anonymity] and when the comment period opens, I'll have to check in with that board on whether the comments I'm preparing in conjunction with their thoughts on it are ones that we want to put [the organization] name on it. And it has happened in the past sometimes it's not [the organization's] name, it's a set of comments that individual growers will submit on their own, if they are so inclined and I go through and set up a whole bunch of talking points and they can pull with what they want. You know, [the board member] has been involved in this, so I can't... and I know

will for certain will continue to be a voice, we'll have a presence, I just don't know. I can't use the word advocate on behalf of the rule because I haven't seen the rule and I don't know if my leadership would want me to advocate on behalf of it. We advocate on behalf of high water quality standards. We do that. But how that gets interpreted based on what's in the rule, that's an unknown."

[TJW Additional prompt: How that gets interpreted in terms of?]

"We say yes. We want good water quality, we want to make sure that the water quality in the state continues to produce high quality marine resources. Um, but once the rule is out, does that change... can we further refine that statement to say what's in the draft rule is going to assure us that we're going to get there. I can't say that until we see this."

[TJW Additional prompt: Provides additional timeline and information]

"I just don't understand. They reduced the risk?"

[TJW Additional prompt: No, they increased the risk. Goes over 6.5 grams at 1 in a million from Washington]

"That's the problem! The from Washington piece."

[TJW Additional prompt: That's why tribal data has been used. Goes over cancer risk change again.]

"So, if you eat 17.5 grams, then that's a risk of?"

[TJW Additional prompt: It's a risk of one in a million. The current rule they are proposing is 175 at one in a hundred thousand. Another way to look at it].

"So, it's double this. It's eating an oyster a day. Or an oyster and a quarter a day."

[TJW Additional prompt: Slightly different way to look at, different fish consumption rate, but increased risk of cancer.]

"It seems like it's a shell game. Glad I came to that on my own. Because when you hear the 6.5... the 175 is just to appease the tribes?"

[TJW Additional prompt: Yes. They are increasing the risk of cancer. They might be able to do it under EPA. They have to justify it to EPA. There's a couple states that do one in an hundred thousand, I don't have too much information on that, but I know that the majority do one in a million. EPA can accept this or reject it.]

"The changes that result to pollution producers would be what?"

[TJW Additional prompt: That's what they are determining now.]

"Is that going to be a part of the draft rule in September?"

[TJW Additional prompt: I doubt that will be in the rule, that's what tribes and environmental groups and industries are trying to figure out, how much difference it's

going to be for industry permits for pollutants. I can ask to share those with you if you're curious.]

“I won't. I don't have the mental capacity.”

[TJW Additional prompt: They're basically looking at the different carcinogens and toxics. They break them down into FW carcinogens, FW non-carcinogens, M carcinogens, M non-carcinogens, I think there is 94 of them. And you have to do the equation for every single one of them and the equation varies a little bit because it takes into affect how accumulative the toxin is within fish tissues.]

“And for the accumulation rate for the fish tissue? Which fish are they using and is there a difference between shellfish versus fish. Who do we ask that question to?”

[TJW Additional prompt: Ecology, as they are writing this rule. What are you using in regards to the bioaccumulation factor? That's a great question. A lot of people right now are going through these massive spreadsheets with the different rules Ecology was considering and this was one of them. So people are looking at what toxins are going down and by how much and which 30% are going to stay where they are as they would have been increased. As you said, it is a bit of a shell game in terms of, really it's 17.5 right now at the current risk of cancer that we'd had.]

“To hear this 6.5 to 175, that's the headline and then you have to read... oh well, that's a much different increase in the risk to the 1 in a hundred thousand. But the 6.5 to the 17.5, at least for my simple brain, that's a lot more palatable.”

[TJW Additional prompt: They've also increased body weight, which no one is really complaining about. 70 kg to 80 kg. That's one of the reasons why it varied so much in terms of allowing different toxics. We used to be just concentrating on the fish consumption rate and then the cancer risk rate came in and they said, oh we're changing the body weight too. So, these are the three main factors – fish consumption rate, cancer risk rate, and body weight. When you see these spreadsheets, you'll see 10 to the minus five, 175, and 80 kg. Now everyone's looking at how exactly it's going to affect toxics, how much industries are going to be able to emit.]

“So, I am relieved to know that these are the three things they are looking at. It's not just we know that there are higher risk populations eating this much and so this way we all have to follow that, but that there are some factors that are playing into it a bit more, and that.... So that is good to know. I mean we need to, because we've been part of the roundtable, we're getting updates on it periodically and when the rule comes out, we'll have to sit down and read it and understand it and figure it out. And we will making sure that it doesn't say stop eating shellfish.”

[TJW Additional prompt: That's been a huge issue in our tribes as well – so many people make their living off of fish and shellfish, it's been a balance, that's why the coalition is called 'keep our seafood clean.' That was intentional. A lot of the environmental groups have slightly different views than the tribes, but they are united on wanting higher water quality standards. But the messaging has been an interesting issue. How do you communicate this issue, how do you do so in such a way that you're not scaring people,

how do you communicate it to tell people that there is a real need for higher water quality standards? That's kind of been a hard debate. One of my co-workers has been concentrating on the coalition itself and I've been talking a bit with him about this. I'm doing this separate from work as a graduate student, but my co-workers have been willing to talk about this.]

“How do the tribes feel about how they are increasing the risk to get closer to their number of 175?”

[TJW Additional prompt: I think that the words you use shell game, is how they feel. It's only been since last week, but they've been hinting at it for months. Talking about continuing deadlines (last fall, March, June) and attaching it to the legislature.]

“That I don't understand.”

[TJW Additional prompt: Legislature not being kind to ecology, talking about EPA last year making a rule for us if a rule isn't done by December, 2014, but without the variances. Not sure if EPA will follow through on that.]

“I wouldn't tempt fate on that. But now, if the legislature decides to not do anything, because of the composition of what it is, what it might be after elections here, then?”

[TJW Additional prompt: It's an unknown, he didn't answer that in the press conference. That's been the main source of contention – why are you attaching it to the legislature. Why not put a rule in place? Some people are thinking that he's admitting the rule's not strong enough on its own. It's a good idea – let's address other sources of non-point source pollution, there's a larger toxics world out there that's not just industry, but it's a bit odd to attach the rule to the legislature. I don't know if EPA has gotten back to him yet.]

“If nothing passes, then he could submit the draft?”

[TJW Additional prompt: Yes, he could submit the rule]

“Short session or long session? I think it's a long session?”

[TJW Additional prompt: Yes, I think it's a long session]

“So, session will be done after the six month window. But he won't have any legislation before December 2014. So he still has to respond back to Ecology, I mean EPA.”

[TJW Additional prompt: I think he made a call to EPA, which was to ask for more time. Whether or not, we'll see how they respond. A little up in the air right now because it just happened.]

“Mmm, kay. Well, now I don't remember how I answered any of the questions but you know, this really makes me feel better about it and I just... I don't know enough about how some of these toxins are affecting shellfish currently, so I don't know if we can blame Boeing or company X or whoever for any problems we are having. I do know that FDA is going to really start looking at viruses and that's not, that's something we're all

going to have to deal with, in how they are being treated in waste facilities and so on. I don't know if that would be considered in this.

[TJW Additional prompt: I don't think so. This is pretty specific to toxics. Out of the 1992 toxics rule, out of the clean water act that was specific to toxics.]

“So, I think in general [this company] will continue to be involved in this and we probably will ask, I will ask our board about submitting comments in support of parts of or all of or consider submitting comments on the rule and see where it goes. But water quality is very important to the shellfish community.

[TJW Additional prompt: In all of its forms].

“In all its forms.”

ORGANIZATION 2

Background

TJW: When was your organization founded?

[omitted to protect anonymity]

TJW: Why was this organization founded? What would you say is the primary purpose for your organization?

“Collaboration of food industry professionals, be they growers, farmers, restaurateurs, trying to pull together what they're doing with the broader audience, which is of course the diners, the ones who are going to be the consumers of it.”

[TJW Additional prompt: So, primarily to get information out to the consumers?]

“Out to the consumers, but primarily those who are committed, they're here for a reason, due to the quality of life, they're here to promote, practice local, sustainable, seasonable food artisan product. And so it's probably the microbe piece of the very popular 100 mile mile, but it's focused around the [western WA region] as a sense of place, so it plays a lot into the Native American tribal cultures and so the restaurants tend to have at least a couple of dishes or tend to have a piece that has a Northwest cuisine. And how do you find Northwest cuisine, that's a pretty large enigma in and of itself. But that's what we try to do related to the [western WA region].”

[TJW Additional prompt: So businesses that focus on buying locally and buying from tribal?]

“Exactly, exactly, right. So, we put together and part of the collaboration is work together [with] restaurants that are either in the game or that are interested in getting in game and they say how do I still be able to, how do I have this menu with what's available? And so, we'll introduce them to providers, producers that are producing it, they'll find out in many cases, it's the same thing that they're getting from their FSA or Sysco truck, but they're getting it through... And then you get into distribution channels, because in many cases,

many of our tribes, it is easier for, the irony is, it's easier for Chef [blank] at [local town] to buy [another local town's] products off of the FSA truck that's come all the way back to Seattle, than it is to get it from [the local town] because of a lack, a current lack, of distribution network between the tribe and [local town]. So, unfortunately, his seafood has to travel a real long distance to have that locally harvested seafood label, which produces a tremendous carbon footprint. So, then we get into people like [local oyster growers] who are saying okay that's not right, how do we work that. [Local seafood store purveyor] right here across the street is significant player in terms of the distribution network and he's getting beyond just peddling fish and actually carrying produce and stuff like that.”

[TJW Additional prompt: So, you're working on the networks?]

“On networks. But the piece of it is that it ultimately serves the client and it serves the customers with something that really is sustainable. Because case in point, the [previous local seafood distribution example] is just not a sustainable model that makes... It may work for FSA and Sysco, but it doesn't work for just the [unintelligible]. In some cases it's just sitting down and saying, how might, who wants to add that to their book of business and is there a business there and that's where like [purveyor across the street] says okay, I've got a truck that's going out there already. Let me check into the licensure, I don't require a whole lot a week, but I can add it, so I can put some produce on there and I can do some of those.”

TJW: How big is your organization (how many businesses/organizations would you say that you represent)?

[omitted to protect anonymity] “And it's probably about two thirds restaurateurs, 25% producers, produce and growers and then the remaining are 10% are festivals or businesses, be it lavender, be it seafood and crab, or be it hoteliers that want to market to foodies, taste tourists and others and so they are packaging in many cases, or in many cases they also have a restaurant attached to the property. They definitely market with winemaker dinners, beermaker dinners, they're using culinary tourism as a marketing position.”

TJW: [Prompt] What type of businesses do you represent?

See above.

TJW: How many of your businesses market in local fish or shellfish? [Prompt] What percentage?

“Local fish and shellfish? Within that 25% that are our farmers and producers, we have mariculture, we've got I can think of about 7 or 8 that are in that shellfish, aquaculture.”

[TJW Additional prompt: And you said two thirds are restaurants, is seafood a focus of theirs?]

“Yah, when you're looking at northwest cuisine, the consumer naturally assumes that if it's not salmon, it's going to be a shellfish piece. I can't think of, we have a couple of strict

vegan vegetarian restaurants that that wouldn't have finned protein on it just because it's against their mission, but it's only two that I can think of right now that probably don't have any shellfish or seafood on their menu. Everybody else, most without a doubt has a signature or token two northwest cuisine. They may be Italian and [unintelligible] or a burger bistro kind of thing.”

[TJW Additional prompt: I've found that in this area, most places with have at least some seafood on the menu. Whether it's local though...]

“Exactly, for us our membership criteria the members should have at least three dishes that could have [our] seal on it, it's seasonal, it's local, it's produced and prepared in a sustainable manner. And many of the places, that's just a natural no-brainer. For a couple of them, it's coming along side and it is something as simple as a sourcing piece. They've got a good fish and chips or something like that, but working with them, they're interested in getting on board, they're interested in the exposure and the marketing, but they're the first to acknowledge that it's farm raised as opposed to line caught. Okay, so let me put you in touch with a couple people, you take a look at the pricing. So, I'm working with a bed and breakfast right now in [local town] that is interested in coming on board, the chef she's really interested. But again they have a bed and breakfast piece, so she's saying how do I qualify with what it is that we're serving. Well, eggs. Sourcing your eggs locally. You have a lot of pastry related stuff that you're baking. Local seasonal berries this time of year are a no-brainer. So, she's working with a couple grain producers, Nash's and others, to see about that. Their quantities are typically so large and her needs are so small that there is an initial disconnect, but she's friends and acquaintances with a couple restaurants that buy a larger piece, so they're actually portioning off the order and getting that to her. So, they're re-selling some of the wholesale stuff. So, she's got it, but she's getting it through a creative way. So, for her it's a win. She's going to be able to come on board with saying, yah, our b&b breakfast has... And then through a simple piece, her breakfast line all of a sudden, a month ago was almost zero [local] grown, but with the berries and the pastry products and the eggs, she now has to have about 66% of her menu is local. So, she's just as happy as a clam. She's doesn't have clams. It's that type of process.”

[TJW Additional prompt: So, it sounds like you are working building the networks and distribution as well]

“Our primary piece and it's just like anything, smoke and mirrors of what's put out, be it theater, be it the dish, that's what the consumer is buying, but the hard work is behind the scenes. That's where all the magic happens.”

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington? [Additional prompt: I know you are a conglomerate of businesses, so this might be a tough question.]

“We are, so that would be tough. We do have a couple of owners, but it's the exception versus the norm, that have moved and have decided to get into business in this place because of just the [unintelligible] of the [Western WA region]. Most are tried and true. Many of them have come full circle, [local purveyor], not seafood or fish, but he's a great

example of a multi-generation dairy farmer who got then into beef production. And he just had an epiphany that steroids in the traditional way of growing meat wasn't sustainable, wasn't healthy and he'll go on and on and on for hours in a very evangelical manner of saying he's seen the light and he now has grass fed beef. And he's advocating for closer organic meat processing facility to take place to make it even a shorter process, but he's a great example of where he's been in that business, he's gone through the dairy, he's gone through the traditional factory meats and he says it's better to produce less, get a higher yield, and be a good steward for the animal and the environment and everything else as opposed to just doing it that way. I'd say that's probably the norm. Particularly with the water quality concerns and things like that, that those that are in the business and have stayed in the business are seeing that the long term sustainability is that they got to do it with, care for the environment. The water or the land, all those issues have to be taken care of. So, conservation keeps them in it and I think everybody at the table, with the [this organization] has that very green filter that they look at the business model. I can't think of anybody who is just a traditional plow it, pave it, produce it, because they wouldn't be making the hard choices to try to collaborate. They'd be doing it on the cheap by ordering it off the back of the truck, opening a number 10 tin can."

[TJW Additional prompt: And they probably wouldn't be a part of your organization then]

"So, we do have a number of people come just to get into that value-based piece, but the majority of them are organizations that realize that if they don't evolve, it's just not going to happen for them. And I think that's probably the story for [local shellfish company], I can't imagine that you couldn't go back to granddad and granddad probably had a different look and a different feel about it."

[TJW Additional prompt: So, a generational change?]

"And that's a common story, a very common story. And they have a different look at it. The exception is you get to [local dairy farmer, he] is the elder statesman of it, and he got it long before. And he's been preaching up before most of us. But he's about ready to retire, but he's already that so he was probably an extreme odd ball with his generation because he was an absolutely lone wolf and now he's..."

TJW: Is this a family business?

NA. See above.

Broader Seafood Landscape

TJW: What are some of the main concerns and priorities you are dealing with in advocating for local businesses? What would you say is your top priority?

"Well, the main piece is profitability, there's such a small margin particularly in the restaurants and there isn't much larger margins in farming. And it doesn't matter if it's dirt farming or seafood in that it just takes one bad season and that's it. So, it's the sensitivity and the balance of finding that sweet spot, so for us it's adding that layer of marketing, promoting the added value of what it is that we bring to the consumers and how we

connect the quality that the farmers are putting into it or the proprietors are doing in preparing it. And making that happen. And that carries through, and it all comes down to a price point. It all comes down to 12 dollar bottle of wine versus a 10 dollar bottle of wine, or cider or a 14 dollar plate vs. a 12 dollar plate. Will the market bear it, will my clients, [member] has the exact same thing with her coffee. There's cheaper coffee with the Starbucks label across the street. There's this here, an extra 75 cents more but you can see it roasted right there, so for her, it's worth it. It's an added layer of complexity; it's an added layer of cost, that hopefully translates to profits for everybody."

[TJW Additional prompt: Are there any other major issues or concerns?]

"It does get, the first piece that we were talking about as far as distribution. We don't have the bandwidth as an organization, we know it's one of the things we'd like to discuss and we probably will be one of the ones that, once we get the bandwidth, helps makes it happen. It's the issues like the distribution networks and it is the issues like the regulatory issues related to additional organic processing slaughterhouses in [Western WA region] and so forth. Those are... they're a large enough issue that it's a big concern to the proprietors involved. It's not a large enough issue until I think we bring it all together and say there's three or four pockets that are happening and hence do we have critical mass to actually help make some change. [This organization] is a 501c6 organization, so it has a lobbying capacity. It's not just a good will 501c3, so the board is cognizant of that and that's part of what their initial plank was, policy plank."

[TJW Additional prompt: I'm not familiar with this issue at all, so there are slaughterhouses that are being proposed here?]

"Well, right now the only organic one is Tacoma, so you get the carbon footprint in that. They have a limited capacity and their dance card is full and so, as farmers want to increase capacity and increase yield or they want to turn a traditional nonorganic farm into an organic, they have to look to where do I take the lambs, the cows, the chickens to market? And there is a mobile WSU sponsored one on Whidbey Island, the logical piece, the short term logical is to present the case to WSU that an additional mobile plant would make sense and it could meet [this region]... cause it's based on Whidbey and it does itinerary down here occasionally, but it does all the way up to Bellingham. So as this whole market sharing industry continues to grow, I think additional satellite facilities would help. There are some folks by the [local] corner store that are putting together business plans and that's one of the stakes that they're working on is, and it's right across the street from [local town] farmer's market, the old gas station there. Right behind it is an old dairy farm, that facility is for sale and so there is a group of investors that is looking at making that an incubator. And that's one of the things being discussed, what would be the capacity now, [local company's] grass fed beef is about a mile and a half a way from that, so [he] is thinking about having a cattle drive, he says he would love it and it would be a great marketing piece, it would just knit it all together and do all that. Those are issues, but they're not issue unless somebody can get... [he] doesn't have enough head of cattle right now, but there are other growers of lamb and chickens and others who are expressing interest and they are saying yah, giving me some pricing and let's see if it makes sense and we'll see what we can do with discussions. And we're

hosting those conversations, we're not doing any of the heavy lifting other than saying, is it going to be essential for the business, is it going to add value to the business?"

TJW: What type of involvement does or has your organization had, if any, in affecting environmental regulations? [Additional prompt: Is this your first foray into that world?]

"Yah, it is. So, again with the bandwidth of the organization, we just don't have... We have within the framework of the board, education, marketing, finance, member services and within the broad range of member services, we also have a policy placeholder and it's discussed as the strategic planning level and it's discussed at the annual board level in terms of is there enough need for the policy task force or the policy group to come together. They've come together for incorporation purposes, they've come together for a couple of other purposes, but there's just not enough business or agenda for that group to really get together on a regular basis. We are involved in tourism and right now and so it's primarily our marketing crew that's doing it, but our marketing subcommittee is helping with Washington state tourism, the whole process of Washington State three years ago closing down the tourism office and since we are a tourism product, we like others feel that's silly that Washington state decided that, which is the 8th largest tourism destination in the country, decided to get out of the game. And so, here we have to the north of us, we have British Columbia that invests 14 million and we've got Oregon with 11 million, California with 23 and Washington zero. So, we've lost in three years, we've lost market share from number 8 to I think number 11 now. And so, the tourism WTA, Washington Tourism Alliance is a grassroots effort of industry folks, they've passed legislation to help create a nonprofit and a member assessment organization, so we're involved more in that in terms of just educating. Because some of the traditional assessments model for tourism is bed tax, hotel, and in Washington it's 2%. So, 2% is still collected, even though there's not a tourism office."

[TJW Additional prompt: Where does that go?]

"It goes in the general fund, so it back funds education, roads, prisons, the three big ones in the state. And so, from an advocacy standpoint, the assessment model is is that tourism is more than just heads and beds, it is accommodations, it's attractions, it's [unintelligible]. The model is is that there would be an assessment model that retailers, restaurants and others would pay a portion to help promote and re-ignite the tourism engine. So, that's what we're working on, primarily is educating members that this is being proposed, in January it's going to be discussed, it will be probably a decent sized initiative that will get decent noise or decent press. So, that's what we're focusing on."

[TJW Additional prompt: This will be an initiative through the ballot?]

"It's been launched and it's been floated and it didn't get anywhere with the short session, but with the long session, it's assumed that it's going to get... because the organization that's been funding it, the WTA was given in the short session, they were given in the short session bridge funding to get them through to this next point. Either the legislation is going to pass and it'll move forward and it's going to be our new tourism office for the state or we'll go back to three years, saying, okay the sky is falling, what the heck do we do. We don't want to slip even further out of state ranking, we want to rise up, that type

of thing. For me, personally, that's the hopeful one, it's the logical one [WTA option]. You can only tread water for so long.”

TJW: What would you say are your member businesses' major issues and top priorities?

“They certainly vary. From a member's standpoint, it varies. Because they do appreciate the bigger picture, but right now... The WTA for example, the executive board and myself, we're affirming it as logical path forward, but I haven't brought it up with [coffee shop owner] yet, but I did have a conversation with one of her contemporaries the other day and he's adamantly opposed to that. The assessment for him is he's out at [local coastal town] has a 40 bed lodging property and they recently reopened a fine dining place and he's looking at an annual assessment of about \$750, not huge but for him particularly as he's just reopened the restaurant, every penny counts and it's the last thing in the world he wants promoted. And so he says, what do you mean you're encouraging that, I'm already paying as a hotelier, I'm already paying a lodging tax, why should I also then pay the assessment model that funds the organization. She's [coffee shop owner] not paying for tourism, the only way through she pays is to get on the map or to market be it an ad or her website or whatever that might be, so for her to think that as an attraction or a restaurant, I'm going to be asked by to pay by the Department of Revenue a little bit extra to promote and it's a logical one, [unintelligible] produce product and it's supporting Washington in that same way. So, yah, there is resistance in the sense that people feel that maybe their mission is not being best served at every point, because they want more drinks or more heads in beds or they want more visitors to their establishment, they don't necessarily want an added layer of assistance that comes with it. Nobody wants taxes, but that's how it's being proposed as the assessment model. So, there's some challenges as we discussed those, as we try to carry forward with that.”

TJW: [Prompt] The same as your issues and priorities or different?

See above.

TJW: Would you say that other local food associations have similar issues, concerns, and priorities to yours? Or would you say you are unique?

“The two that I can think of is that one is Washington Restaurant Association and theirs is very different than ours. They are really are supporting the big factory farms and they really do have a more mainstream look with the red robins and olive gardens and that size and that scale.”

[TJW Additional prompt: Not as much focus on the local?]

“Not focus on the local. The world food alliance out of Portland. They are much more in keeping and much more akin with, and they're really more primarily focused from the consumer standpoint and they are lifting up much more the experience at the end of all, behind the scenes drama. The only thing they deal with, from an international standpoint, is, they have some legislation that they get involved with. How consumer can export, can ship home wine or spirits that they purchased overseas. And, so they're a little bit involved with that part of custom and TSA and stuff, but the rest of it they're primarily

promoting the destination, promoting the experience of essential America, or the Orient, or whatever it is. And the food culture and so they have more of an international flare.”

[TJW Additional prompt: Interesting]

“It is, considering that they're in Portland and they're just a stone throw away the really happening mecca of food trucks and everything else like that. And every time they have a meeting, they took full advantage of it, but they're more international in their focus. So, those are the two kind of spectrums and we're kind of in the middle. We liaison best and we partner best with lifestyle food writers and journalism and folks like that that are looking and acknowledge that sense of place in food is an important piece, to Sunset or any of those publications that are promoting itineraries, destinations. So those guys love what we're doing, Evening Magazine, exactly, their story assigners and assignment producers are big consumers of what it is that we've got going on as far as festivals and events and they'll use those as pieces. It could be the [local food festival] but then for us, it's packing together to get to [local food festival] from Seattle is a half a day's journey, depending on the bridge traffic and all that. So, putting together a package with [local hotel] on the high end so people have a place to stay, or putting it together with some other spots and then taking a look at [local restaurant] or taking a look at [other local restaurant] and promoting the fact that you may have enjoyed experiencing it and it was the first time you're on the beach, but now how do you get a chance to locally taste it and have it all come together and really understand how to shuck it and fry it and do all the stuff. And so, we put together the packages.”

[TJW Additional prompt: That's great, including both the high end for the Seattle traffic and then perhaps something like other local hotel for others that couldn't afford that much]

“They would be perfect price point for that lower price, but I can't get them on board as of yet. But that would be a perfect kind of example in terms of proximity and location. Because it's too far to take them all the way into [local town] or it's too far to haul them all the way up. And [higher range hotel] is right for a certain well-healed... but if you're not driving your Beemer, then you're looking for another place that's a little more price effective. That's how we're trying to position and package based on that, so the consumer can put it together and say, yep, that's what I'm interested in.”

TJW: What are some of the other kinds of issues that other local food associations are facing?

NA. See above.

TJW: [Optional] What are your views/experiences toward/with state regulation?

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“So, I think it's probably the most, the most recent piece in terms of the proposal out of the state for altering the fish consumption and that's been within the last two weeks that news cycle has come. So, we're hearing from the consumers, well what does that mean? It's once again okay to eat and I'm supposed to eat is what the understanding is. And the restaurateurs are saying, when is this yo-yo going to stop? At least two have used that term, in terms of the back and forth, it's either taboo or all of a sudden green light or red light. So, from a consumer standpoint, it feels, the anecdotal is it's being promoted and it's being white hatted that fish consumption is no longer foreboded. From the restaurateurs they're sticking tried and true with what they have but they're just interested in consistency as opposed to that yo-yo.”

“At least on this current story cycle. From a tourism standpoint, it's perfect as it's right at the peak of our travel season, so it's supported the summer season and all up and down water street, all the seafood places that are opening up their decks and, of course, their fresh sheet includes the salmon or whatever, that's great, that's perfect. So, that's the two yin and yang sides of how my office has heard it and seen it and responded to it. I think the concern is as the season ebbs from the tourism season and it pulls back into the shoulder season, the last thing the restaurants want is for that yo-yo to retract again and discourage, people come back again and say counterpoint shows the newest research shows there shouldn't be as much consumption, and that's the last thing they want is to have an ebbing seasonality overlap with a counterpoint on it to say maybe toxicity and mercury levels and a variety of other fears are put on seafood. And then, in the shellfish, the biggest piece has been primarily from the industry standpoint, it's just been the, I'm just thinking of [local shellfish company], having his primary market to Asia. Now, he was selling product to China via a vis Vietnam, but... And he was selling directly to China for a long time, and then he found out he wasn't going to get as much per pound, but he was going to get the product off the beach as long as he went through Vietnam as long as he did that stuff. It's those kind of pieces.. And [he's] the one from a water quality standpoint, who is absolutely, talking about bandwidth and capacity, [he] has long been going on saying I would love to have somebody, hint hint [this organization], we just don't have the capacity for that. But my understanding of it is the area that [local bay] is mapped, from a water quality standpoint, is a very broad region and he contends that his microclimate, for lack of a better term, is different than what is being reported out beyond [a certain point] or whatever. But his zone is encompassed by that full area and he would love to have...”

[TJW Additional prompt: A re-zoning to a different growing area?]

“Exactly. So he had something that would give him less closure days because it's being applied in a very large global sense. He can understand that from Ecology's standpoint is probably efficiency and I'm sure there is some scientific justification that says, yep this is appropriate microclimate that encompasses all of it, but [he] has paid more times than he's want for re-test to keep himself open when the rest of the fishery zone has been closed.”

[TJW Additional prompt: Is it mainly due to vibrio?]

“I believe so. So, we don't have an active public policy subcommittee, but that would probably be very very low is to help somebody like [shellfish grower] advocate for re-zoning because then Ecology would also say well, that's another sampling area and another testing area and how are we going to be able to manage that when I can only imagine they're going to say, our staff isn't growing, our staff is being reduced in size and their enforcement area is being increased.”

[TJW Additional prompt: Discusses risk-based system Health is testing, offers to send information on this]

“I would be interested in it, at least help me have some level of intelligence with the conversations with him.”

[TJW Additional prompt: Discusses vibrio multiplying in warm water]

“That's it exactly. He says his beaches are not as hot as the other areas within that zone and so he's being unfairly closed and he then has to pay to show that he's still open and still viable. He says that he would love to be out of that neighborhood. And that's absolutely a layman's assessment of grief I've heard. But that would the other side of it, particularly from the shellfish that's the biggest things that I've heard and I haven't heard anything from the consumer in terms of either awareness or angst on it. It's really from the...”

[TJW Additional prompt: For that particular issue, it's really just from him?]

“Yah. And [larger shellfish company] and other with just acidity and the fact that their seed plants are failing. [Larger shellfish company], particularly. That's a major piece, so [larger shellfish company] is spending an awful lot of time with their plants promoting and opening up oyster bars in Queen Anne Hill and less emphasis on the growing there because they're just not as productive. And then cost of seed is going to go through the roof just because of the cost of getting it from Hawaii back to here.”

[TJW Additional prompt: That's goes beyond the 100 mile radius that your organization is striving for]

“Exactly. We have that same issue with grapes, there is just one barrel of grape that is from the [western WA region], and yet there is 11 vintners that produce it here, so you get into that piece. Her coffee beans are not grown [here]. So, there's a certain point where you get into the finish, you get into the production of it and if you really do take it all the way to the seed, then we have a very small audience. [Local] brewery across the street, their hops are coming from the east side. And the grapes are coming from the east side. It's what we call in the wine industry, what's the personality that's in the label, behind the label, and it's the reason that people have wanted to grow it here and it's the lifestyle that they want to do. And the same applies to the seeds. I think the same would apply to shellfish, but that would be a paradigm shift for them just to think like [the] west side winemakers knowing that their grapes are coming from the east. Unfortunately it may be in a generation or two, but our shellfish producers are going to have to have their seed come from Hawaii. So, that will probably have to come with some level of a consumer education to it, but again the consumers don't it from the coffee, the wine, or

the other product that isn't grown here or produced here. So, that's an easy one, we can get to yes on that.”

TJW: If yes, how did you hear about this update?

NA. See above.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA. See above.

TJW: Do you agree?

“My personal opinion is that I think there is increased consumer education and outreach on it. I personally feel that more news and more information is getting out, so good bad or different, in terms of how the yo yo or the debate is going, I do think there is more transparency. I think the transparency is good, I think it requires an educational piece to understand what this new data stream really means and what am I hearing and all that. But, it's better to be out there.”

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

NA.

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Yes, absolutely.”

TJW: [Optional] What do you see as the role of your organization, if any, in advocating for higher water quality standards?

“I certainly think we could do it and I think it would be an interesting piece for us to think about, from a position statement as well as tie it into a membership piece, we have celebrated a sense of place, but adding water as another attribute because I think clean water in the [western WA region] and [this organization] are similar images and similar pieces. People have a perception of pristine and a perception of clean water, clean air when they think of [this western WA region], so I think that's a win win. The [local restoration project] and the restoration efforts have, the salmon runs, not so much clean water, but access for spawning salmon and so forth, that's a great story and that's one that we, particularly in the [local] area are happy and we're looking forward to the fresh sheet that says it's not Copper River, it's not line caught, it's coming out of the [local river]. And that'll happen in a year or two.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Well, it would probably be development, urban population growth, and it does get into just sharing the finite resource of the watershed from farmers to urban planners to the salmon. And I look at the Klamath River and I look at that whole debate as just an absolute textbook case of worst case scenario of water rights and water quality and who gets it and everything else. And I don't want Washington to have that same State of Jefferson kind of mentality that the water is so fragile and so friction based that it results in folks saying, well I've got to secede from California or whatever to be heard.”

[TJW Additional prompt: Discusses public commenting period coming up soon]

“Let me know and I'll have it as a link and if you're looking for a strata of more educated or... at least you'd have our consumer base and we'd happy to promote, respond, let them know what you think. And it would be an interesting piece if you had smart enough analytics to say that the click through came from the [organization] site. I would be interested in knowing if our folks trended. They would be more opinionated, I would think, than the average consumer because they're interested in getting [local fish company] on their plate as opposed to other salmon.”

RESTAURANTS 1

Background

TJW: How long has your restaurant been open and in this area, etc.?

[omitted to protect anonymity]

TJW: How long have you been working at this restaurant?

“A month and a half.”

TJW: How long have you been in the restaurant business?

“Sixteen years.”

TJW: Where were you working before?

“Olympia, Seattle area before I came over to [Hood Canal area, Mason County].”

TJW: Why did you come here?

“I actually live pretty close to [Hood Canal area, Mason County]”

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?

[omitted to protect anonymity]

- *Is this a family business?*

NA. Chef only has been here a month and a half.

TJW: Why did you decide to specialize in cooking local seafood? This is something that the restaurant has specialized in, have you emphasized as well?

“Yes, I do. Our oysters are actually just right out here. This guy actually picks it whenever I call him and he tags it.

[TJW Additional prompt: Which company?]

“No company, just [name of person selling] out of his house. You know [person selling the oysters]? I just go through [him] and he just picks out whatever I need and brings it back. I just got an order today.

TJW: What kinds of seafood does your restaurant/bar specialize in cooking? [in addition to oysters]

“We do clams. Clams out here basically. Our clams come [from] [large shellfish company]. Our mussels come from [same large shellfish company], there is special. Depending on halibut, depending on the season, we can get it from Westport to Alaska. We want it local basically.”

[TJW Additional prompt: But still west coast?]

“Exactly.”

[TJW Additional prompt: Do you prioritize Washington over Alaska?]

“Oh yah, definitely. So, salmon is coming in hard now, so I buy all my salmon from there, from Westport. Shellfish mainly from here [Hood Canal, Mason County].”

TJW: Who would you say is your typical demographic in regards to customers?

“Local and fresh meets the eye here. Pretty much farm to plate here. Our produce... but that's not really what you're looking for...”

[TJW Additional prompt: No, I'm interested in it all]

“Well, our produce is 100% that we get from the farm.”

[TJW Additional prompt: Does it still come from the nearby valley?]

“Yes.”

Restaurateur/Chef Priorities

TJW: What are some of the major issues you are dealing with as a restaurateur/chef in regards to seafood?

“Issues right now, basically I can say about our oysters. They just release, the Fishery and Wildlife, they release a code red because it's so hot now. So they want to actually pick up the oysters right away and put it on ice. Rather than before they reach up to 70 degrees temperature wise. So when I got my oysters today, he was telling me it's a risk right now

to get it, to eat raw [for vibrio] for not cooking it, so I have to source from another source like Taylors or somewhere where they can get oysters to not harm the company or harm themselves, the customers.”

[TJW Additional prompt: So, you're not selling raw oysters right now?]

“We are. This is my last one. Because he comes in and checks the temperature, so when it hits 70, even when it's on ice, it's a risk because of temperature-wise.”

[TJW Additional prompt: Did WDFW come in and check that, talk to you about that then? Or up to your supplier to tell you?]

“Exactly, the suppliers warn us because they already issue a letter and the suppliers are like, it's up to you, but then it's like waiting for the suppliers to sell it to me.”

[TJW Additional prompt: So [large shellfish company] will be able to get you raw oysters throughout the summer?]

“Right.”

TJW: What are your main concerns and priorities when it comes to obtaining seafood?

“I think safety and quality of the seafood, of course when summer comes, the oysters don't taste as good because they are spawning. To me, mainly safety. I don't want to...”

[TJW Additional prompt: And when it comes to other types of seafood you sell?]

“Not really a problem, because they catch the salmon and then they freeze it. I have my frozen salmon coming in through the winter months and they freeze it on the boat, same as the halibut and all that. I get pretty good stuff coming in during the winter time.”

[TJW Additional prompt: Main concern then would be the quality or taste?]

“Quality-wise.”

[TJW Additional prompt: Is cost an issue as well? I know your focus is on the local.]

“It's definitely a little higher [the price].”

TJW: What would you say are your customer's top concerns or requests when it comes to seafood?

“They want it local. We tell them less than a 100 miles. Um, quality of the seafood. If I can't get it local, I don't really sell it.”

[TJW Additional prompt: So, your menu is variable?]

“Clams I can get all the time, halibut and salmon I can all the time, salmon is not actually on the menu, more for the fresh sheet, I can change my fresh featured fish every time, to whatever is in season, I can get it, I'll get it and I'll feature that. So right now, basically

salmon. Like ling cod will be coming up. I just ordered some ling cod coming up. And the features are all mainly fresh, never frozen.”

[TJW Additional prompt: So for your customers, the questions are about local and quality. Do you get a lot of other questions from customers?]

“Mainly those two items. They don't mind paying the extra for being local and being fresh.”

TJW: Does water quality affect or come into play in determining from where you purchase your seafood?

“Yes, I do. Um, as a fisherman, I think the oxygen level has been dropping in the way that is decreasing that has been decreasing my salmon around here because I fish a lot of salmon. Where I live, the salmon run spawns and every year, I've been living there for 10 years, the salmon has been decreasing each time coming back spawning, I've been noticing. The water quality has been going down. Less seafood, I guess.”

[TJW Additional prompt: Does that affect your determination in where you buy your seafood? Do you think about that or looking at quality in terms of taste and local?]

“The water quality is important too, but yah, I would say, cost would be a minor thing over there because I want the quality of my food and seafood to taste good. If it doesn't taste good, I won't put it out. I think it's been dropping, the quality of the seafood. And taste-wise too. Mainly quality.”

[TJW Additional prompt: How would you define quality? ...just in terms of taste or texture or?]

“Texture, we used to fish 50 pound salmon in terms of fishing. Now it's hard to catch a 50 pound salmon, a 30 pound salmon is hard too.”

[TJW Additional prompt: I don't fish much out here, more crabbing.]

“I don't fish out here [Hood Canal], I go out in the sound. More Tacoma area, Area 13. That's where I fish and crab.”

TJW: Have you been effected by shellfish closures and/or fish advisories? If so, how often?

“Yes, out here. Oysters and crabbing. The crabbing has been shorter and shorter each time, the crabbing season. I understand sometimes why they do, basically there's no crab out there. The water quality.”

[TJW Additional prompt: But haven't been affected much by fish advisories for areas you get fish from?]

“No.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

"No."

- *If yes, how did you hear about this update?*

NA

- *What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?*

NA

- *Do you agree?*

NA

- *If no, [then provide brief background {see below}] what is your perspective on this issue?*

"Does this include mercury too?"

[TJW Additional prompt: Yes, this is included too – continues to explain]

"Um, where I used to work, they had a fish watch they send in, basically what fish to consume, um, either farm raised to fresh to whatsoever you need in a restaurant. And I used to have like a water quality, they do bring up water quality, why we don't want you to buy this fish right now or eat this fish right now for certain reasons. Same as the spawning- oysters [and] whatnot. I do get it, but it's true of corporate company that they will post a fish watch to you, this is what we recommend what you eat right now, where I used to work. So, the company actually sends people to survey at the fish market what to eat, what to buy, to talk to the fishermen out there and they make up this basically what to buy for the restaurant and what to eat and what season is good to consume. I think it's a good thing for individual companies or corporate companies where they... the sustainability of what to eat, rather than just fish them all out. That's my point of view."

[TJW Additional prompt: So, they've told you, in terms of conservation wise, species-wise what you should buy. The DOH has put out a pamphlet on which fish have more contaminants than others. Something along those lines, something you would be interested in?]

"Um, yah... Or farm raised would help the water quality out there, the water, which you can actually bring up the species again. For the time being, I think the farm raised would be good... to actually have a higher fish consumption in the future for the water and the salt water, I guess."

[TJW Additional prompt: So you would want more farm raised fish?]

"I would say sustainability, it's better, because everything is the quality of the fish and the quality of water is going down."

[TJW Additional prompt: So more farmed fish than hatchery or wild fish?]

“Yah.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“I think so, definitely.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Yah, basically outfishing all the fish.”

[TJW Additional prompt: So you think that that is the bigger issue, the outfishing of the fish?]

“Yah, being greedy basically, fishing more than we actually need.”

[TJW Additional prompt: Would you think that overfishing is more of an issue than contamination?]

“Overfishing equals contamination too because you bring the boats out more often, the pollution of the water. Adds to the rest of it.”

[TJW Additional prompt: The big issue though for seafood though that you would see if overfishing?]

“Right, most definitely.”

RESTAURANTS 2

Background

TJW: How long has your restaurant been open and in this area?

[omitted to protect anonymity]

TJW: How long have you been in the restaurant business?

NA. See above and below.

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?

[omitted to protect anonymity]

TJW: Is this a family business?

[omitted to protect anonymity]

TJW: Why did you decide to specialize in cooking local seafood?

Chef (C): “I think for, initially, it's just necessity is the mother of invention. There is so much good product here and aside from trend based reasons in the culinary world of farm to table, ocean to table, I mean it's just more responsible way to approach business on a small economic scale.”

O: “And our business model in general, we try to be as socially responsible as we can. So, I think that for us on the vision level, it's really important. And then I think that we maybe attracted the right people who have the same vision and the know how to implement it, which we don't know.

TJW: What kinds of seafood does your restaurant/bar specialize in cooking?

C: “All kinds. I mean, you know, with keeping a reasonable bullseye target on what we source within a certain, I kind of have a 100 mile. My theory about cooking local is within that kind of 100 mile radius, whatever would be sourced or naturally occurring in that area.

[TJW Additional prompt: So a variety of fish and shellfish, as long as it's within a 100 miles?]

C: “It's not confined to a 100 mile radius, but just trying to look within those, primarily look within those boundaries and see what's available here first and then if we need to supplement. For instance, red tide with the [local bay], I'm currently not running half shell oysters. Because of the water quality levels.”

TJW: From where do you buy your fish and/or shellfish?

C: “Well, we have some great local purveyors, a few guys that we source them directly in the bay, as far as clams and oysters and then local fishermen and that kind of thing. Otherwise, we supplement with [large seafood distributor], which is kind of a Pacific Northwest purveyor of fine seafoods and then they source from different middle men. Just wherever, again trying to source locally wherever we can first and then...”

O: “And I think [the large seafood distributor] is very good at understanding what our, our rep is good at understanding our focus, he's local. He does a good job bringing you guys information on what's available.”

TJW: Who would you say is your typical demographic in regards to customers?

O: “It's all over the board because we're hotel/restaurant. Our target demographic is like an urban 30 to 50, 25 to 50 year old that is really looking for local sourced food, sustainable environment. That's our target demographic. But we do have customers of all demographics and we kind of have to educate and understand that.”

Restaurateur Priorities

TJW: What are some of the major issues you are dealing with as a restaurateur in regards to seafood? What are your main concerns and priorities when it comes to obtaining seafood?

C: “Well, availability is always an issue. Having a broader availability, understanding where we're at geographically and understanding what's actually available to let's say a bigger seafood house. An example I can give, the restaurant I ran in [omitted to protect anonymity], I would have anywhere from 15 to 20 different kinds of oysters on my menu on any given time and a lot of them came from this area of the world, but I can only get one or two varieties here. The distribution here is very limited.

O: “Like [large shellfish company] is one of the biggest oyster growers and it's difficult to get oysters out here.”

C: “I can't get them. If I was in Portland or Seattle or Chicago, I could get them. So, there's not a very long reach to us little [coastal area] folks. So, just having a broader availability for our clientele is always a priority, but it's not always easy to fulfill those needs. So, there's a lot more footwork involved, got to be more proactive, actually get out there, contact, work with the farmers, work with the people raking the shellfish and build those relationships organically.”

TJW: What would you say are your customer's top concerns or questions when it comes to seafood?

C: “Oh yah, absolutely. Again, to go back to the not running half shell oysters. It's not so much, the questions are more like, what do you mean you don't have oysters, these guys have oysters down here. They do, but do you want them? Do you want me to tell you why you don't... why we don't do it. Not why you shouldn't eat theirs.”

[TJW Additional prompt: That would be difficult, you want to educate, but you want to foster a sense of community as well]

C: “Yah, you want to preserve relationships in the community.”

TJW: Does water quality affect or come into play in determining from where you purchase your seafood? Outside of closures?

C: “Yah, absolutely. I guess an example I can give, for a dish that I was running in another restaurant that I was affiliated with in Chicago, we were running this, something with these gumbos, these giant prawns, we stopped sourcing them because of the water quality of where they were coming from. Not because it was a closure, just because of whatever the practices were, the unsustainable practices in this area that the shrimp were being sourced from. We just decided that it wasn't ethically not right.”

TJW: Have you been effected by shellfish closures and/or fish advisories? If so, how often? [this was asked as are you affected by “red tide,” does it affect where you get your oysters, or do you have a variety of distributors?]

C: “Well, I mean, yes, yes, yes. We try to support as many local purveyors that fill that niche. We try not to use overly fished within those purveyors, what they supply. For instance, yesterday was the end of Dungeness crab season, so we won't have crab on our menu, so we have to kind of adjust with the market.

O: “And then you have consumers that don't necessarily understand that always and so it's explaining also holding our ground a little bit.”

[TJW Additional prompt (circled back to this question): Do you see shut downs as a regular occurrence? Do you have any fish advisories? Anything that comes from Department of Health?]

O: “I don't feel like we get that much information.”

C: “Yah, we've made these decisions based on our own research and understanding.

O: “We don't get a lot of... I mean, we would have to go out and find the information. Nobody really provide it.”

C: “With the exception of the bigger seafood houses that we use like [larger seafood company] or [unintelligible] in Portland. Those guys are really proactive about saying, hey, stay away from this and this right now, we're not pushing it because of this. So, there's some information out there when it's available.”

[TJW Additional prompt: But that's mainly from a distributor rather than a regulatory agency coming in]

C: “That's correct. There's none of that.”

TJW: [Optional]: What are your views/experiences toward/with state regulation?

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

C: “Um, no.”

O: “I've heard a little bit, just from a consumer side. The recommendation of how much fish you eat annually, mostly because of mercury I think?”

TJW: If yes, how did you hear about this update? Was it through the media?

O: “Yes, passively.”

C: “I can agree with [the owner] as well, passively, not to any detail. Aside from our own county-wide information about personal water quality, but not related to fish or fish consumption.”

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background] what is your perspective on this issue?

O: "Does it depend on the water way? Like, I know that the water in Alaska is much cleaner than the water on the Columbia."

[TJW Additional prompt: Says yes and continues to discuss this and then goes on to discuss the water quality criteria factors, including the acceptable risk of cancer from eating fish and shellfish]

O: "(laughs) What's acceptable? How much arsenic can we put in our bodies?"

[TJW Additional prompt: Continues to discuss this and new proposed rule of 175 and change to one in a hundred thousand]

O: "Wow, that's significant."

O: "What are the industries that would be most affected? Coal?"

O: "How much, do you know how much it will increase the standard?"

[TJW Additional prompt: Continues to discuss this, 30% of toxics would have gone up, but Inslee said no backsliding, and 70% will be more protective. A lot of back and forth and discussing this]

TJW: Do you think that there is a need for higher water quality standards in Washington State?

O: "(laughs) I'll let you go first"

C: "Please, let me absorb a little bit of this first (laughs).

O: "I guess my opinion is that I absolutely agree that we need higher water quality standards and I think that business needs to be pushed to do the right thing sometimes, especially businesses that show very high revenue that have the ability to then make changes to become more sustainable in the long term. And as a small business who sometimes makes hard choices to do those things, I want to see big businesses doing the same thing. So, my initial reaction is, it sounds like, you know, it is a compromise, which is required in government, but it's sad that we have to increase the risk of cancer by 500 percent to make that compromise.

C: "Agreed. (laughs). I mean, again, compromise, I wouldn't say so much sacrifice."

O: "And encouraging those businesses to look at the long game. We can't keep polluting at the rate we're polluting. We have to find other ways to do the things that we're doing."

C: "Agreed. I couldn't say it any better."

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

O: "Industry. I mean, money."

C: "Industry. I think it could only help us, for the direction that we're going in, I think it could only help us."

O: "Have you, curiosity, interviewed any fishermen that have an issue? I mean they're probably all on your...?"

[TJW Additional prompt: Mix of mentalities and opinions. Discusses opinions on more testing in the future]

O: "And you have oysters that hold more toxins. I mean we eat the entire oyster. Salmon's a different story, but we have to go for the assumption that we're eating the most, we don't want to lower or raise that risk to one in 20,000."

RESTAURANTS 3

Background

TJW: How long have you been in the restaurant business?

[omitted to protect anonymity]

TJW: How long has your restaurant been open?

[omitted to protect anonymity]

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?

[omitted to protect anonymity]

TJW: Is this a family business?

[omitted to protect anonymity]

TJW: Why did you decide to specialize in cooking local seafood?

"Well... after living in Seattle for a little while, I took a job as a chef of restaurant called [restaurant name] which was opening up as a grand seafood restaurant in downtown Seattle. It was high end, spare no expense, seafood from around the world concept and the only requirement was that it was fresh. And so right off the bat, we began to procure this array of exquisite seafood from around the world. And I had not focused on seafood, even though I had worked [omitted to protect anonymity]. I had been exposed to seafood and it was part of my repertoire and I had used it extensively on my menus for fish from around the world and I was pretty familiar with it. I didn't focus on it until I took over chef as [restaurant name], so when I took over as chef of [restaurant name], for the first

couple of years, everything was great. And, but I think along those lines and around that time, people began to really evaluate what made seafood rare and valuable and one of the things that we began to discover is that because these resources are going away, they are quickly dwindling. At that time, I began to become conscious of what I was doing and I began to wrestle with it and not feel so good with it. So, about three years into it, I started to do some work with the Marine Stewardship Council, and I started trying to make up for what I was taking and try to choose my seafood more carefully. I stopped using bluefin tuna, so this would have been in 04 or 05, I really started to become conscious of it. I didn't use any farm raised fish, any farm raised salmonids, and I did use farm raised freshwater fish. And weighing my options, I stopped using... well, I was still using at the time farm raised crab and farm raised shrimp because that was part of the model of the restaurant. And so, I had a problem with that. And as I began to do more research, I began to realize that I didn't feel like I was in the right place, that I was doing the right thing. And so, I had been at that restaurant four or five years, this restaurant we're sitting at right now as [restaurant name] And so, I decided that it was time to do my own thing. [...] and I went off and opened up [their first restaurant]. And I said okay, this time, in order to make everything fit nice into a square box, I'm just going to use seafood from the Pacific Northwest, that way I know, around this time the Cool Act was in place and the Country to Origin Act was in place, basically it requires that seafood now be traceable. And I realized that, when you buy fish on the international market, things like tuna and mahi mahi, things of that nature that you're buying on the international market, they come from places where, you know, money is very scarce and people are very poor, so the value of a tuna maybe worth more than people's lives. So, there's no... in my opinion, there's no level to which they won't stoop to bring you that fish. And that's the situation where all traceability and responsibility goes out the window for money, so rather than be a participant in that market and live that lie, I said I'm just going to buy fish from the Pacific Northwest. So, I opened up [first restaurant] and have done that every since, not only is it domestic, but it only comes from Pacific Northwest. But the list is pretty finite. I have halibut, salmon, blackcod, lingcod, petrale, rockfish, Dungeness crab, mussels, shellfish, all that. Everything that comes from the area, but it's fairly limited. And that's worked really well and also on top of that, most of the, I guess, philanthropic work or the work that we done to help causes, charitable donations, have been around seafood causes. So, rather than support human issues, both restaurants, [first restaurant] and [second restaurant], have chosen to support seafood issues to give back to exactly where they have taken from. So, that was a closed loop for how we've been able to feel better about it [omitted to protect anonymity] So, in order to make this work in my mind, with my integrity, I decided to only use domestic seafood, so that makes it at least if the resources are not inexhaustible, at least they will be managed to the best of modern science, even though using the best techniques of modern science, all of our salmon the Puget Sound are on the endangered species list, but at least we know we're doing the best we can. Something that as been kindof important to the genetic makeup of this restaurant and we've continued that to this day. We don't use any farm raised salmonids, we do support farm raised freshwater species, so we use catfish, freshwater arctic char, farm raised, we use mussels, clams, oysters, and the things that are, the fish that are, the wild rare species would be for us, wild king salmon, winter king. We use it, you know, it's very valuable and very expensive.”

[TJW Additional prompt: So, you price it accordingly in order to show how rare it is]

“And it also costs as much money now. And so that's kind of how we built the framework of this restaurant and this is what we practice today.”

TJW: What kinds of seafood does your restaurant/bar specialize in cooking? [Additional prompt: So, with this restaurant it's domestic nonfarmed, unless it's freshwater, and with the [first restaurant], it's just Pacific Northwest and nonfarmed unless it's freshwater]

“Yes.”

TJW: From where do you buy your fish and/or shellfish?

See above.

TJW: Who would you say is your typical demographic in regards to customers?

“Well, we're [in mid-sound area], so we rely heavily on the [local center] and hotels, tourists, business travelers, recreational travelers and more so than probably the downtown urban dwellers, but they are a big part of what we do as well. The major chunk of our business comes from the hotels and the [local center]. And these people are coming for specifically Pacific Northwest seafood, which is very convenient for me.”

Restaurateur Priorities

TJW: What are some of the major issues you are dealing with as a restaurateur in regards to seafood?

“To stay in business, that's the most important thing, that trumps everything. And this is a very precarious ledge that we walk everyday in this business. Because this is... I have kids and a wife and it's just me and her and my name's on the lease and if it goes down, we go down. Most people don't even understand what that means. So, we have everything we have riding on this business, so it has to be a business, it has to make money.”

TJW: What are your main concerns and priorities when it comes to obtaining seafood?

See above.

TJW: What would you say are your customer's top concerns or requests when it comes to seafood?

“Unfortunately, people that are in the industry, these issues are on the surface for us, right, so we deal with them everyday, we're concerned with them, we work with them, we pay attention to them, but for the most part, Joe consumer doesn't even understand. They don't even know, most people who walk in the door don't know the difference between wild salmon and farm raised salmon, they don't know that there's a difference. People

come in from the south all the time and go, oh you know I eat salmon every day, I don't feel like eating salmon. And you have to tell them, listen, we're not talking about the same thing, we're not talking about the same thing. And it takes a... very few people, even though the Monterey Bay Shellfish Seafood Watch card in every menu, people don't really in general aren't that concerned about it when they go out to eat, as much as you would think, as much as YOU would like to think and I would like to think."

[TJW Additional prompt: That was one of my questions, how many people come in and ask questions about local seafood or sustainable practices or?]

"Some do, but I would tell you it's less than 10%, but I'm not a server, I'm not fielding all those questions, but if you want to ask a server, we could ask one. I'm kind of curious too, so let's grab one."

Owner asks server: "What percentage of people that come in the restaurant are concerned with seafood issues as far as sustainability and sourcing. Do you get that question a lot, realistically?"

Server: "Realistically, people don't ask until at the end of the night when we drop the check, we have the little sustainability card and then people, that's when they voice, this really cool, they're interested in it, they don't usually ask me ahead of time. I would say maybe 5%, one out of 20 people say that, but when they get the card, then whether before hand they were interested or not, a lot of people come and say this is really cool and talking about it like that. But ahead of time, it's not really too often."

[TJW Additional prompt: So then you are more educating your customers as they come in]

"Right. We are to an extent. Um, first and foremost, it's a business. So, we don't look at it as a classroom or an opportunity to educate people, we don't force it on them when they walk in the door. It is part of what we do and part of who we are. If you read any of our collateral on the website, it tells you all of that, it's all listed, this is what we do. Have you done that? It's part of what we do, but it's not... we don't.... we're in the business of making people happy and most of the people who walk in the door, they don't want to be educated, they just want to get a nice piece of fish. So, that's what we do. And, where was I going with that. It's kinda sad, but look, in reality, there's so many issues that people have to worry about from ebola to the stock market to cancer of every form, to diabetes to even the humane society and dogs. There's only so much attention that people can give to these issues, so I understand it and while, your work and what I do, I appreciate it, it's important and it's valuable. If somebody doesn't do it, there's not going to be any salmon left. And even people think in Seattle, they think, they walk in the door, Seattle's the home of wild king salmon. They don't realize that most of our salmon comes from Alaska and everybody thinks, oh Alaska, it's an inexhaustible resource, everything is great, everything is great. Look at the poor people in the Kanektok, in western Alaska, in the Bering Sea, that's the greatest salmon fishery on earth and they are almost devoid of salmon. Not even enough salmon coming back to fish. So, you know, it's not, there's no

such thing as an inexhaustible resource and if people don't pay attention and protect these resources, they will be collapsed soon. As we know it, this stuff is going to change. Next thing you know, people are going to be eating krill and seaweed. Have you tried this krill? It's delicious, exquisite."

TJW: Does water quality affect or come into play in determining from where you purchase your seafood?

"So, I only buy my oysters from one company, well I buy them from two, but most of my oysters come from [large shellfish company]. And [large shellfish company], they don't wet store anything, they only dry store and they only order oysters that I order. So, he calls me up on Monday and Thursday and asks me what I want, he places his order, they send it, he sends it to me. Okay, that's not enough oysters to cover all my needs, so I order oysters from [large seafood company]. And [they] gets most of their oysters from [shellfish company]. Lately, there's been such a shortage of oysters, a lot of time, I'm taking what I can get. But, two years ago I had issues in the summer time especially this triploid thing. People getting sick."

[TJW Additional prompt: With vibrio?]

"With vibrio, two years ago. So, I got a couple visits from the Health department and this year, I was like, I don't even want to deal with it. I'm going to take oysters off my menu in July, in the last week of July, the first week of August, just going to take them off the menu, because I hate it. So, anyway, I worked on this, I told my guy from [large shellfish company] and he said, don't do that, don't do that, so we have new standards in place as to how we're going to manage these fisheries, these oyster beds, how we're going to harvest this stuff, how we're going to take care of it once it's harvested. And so, everything was great this year, there was a very small supply of oysters, but the ones that we had, nobody got sick. I didn't get any visits from the Health department until last week. Which last week, apparently on September 24, two people ate oysters at happy hour and one person got sick, so one person got a bad oyster. But yah, I would tell you, the reason why I buy from [him] is because he requires that all this growers provide documentation that they have water quality standards checked that year, every year it's checked before he starts buying for the season. So, I know that the oysters that are going to come from him are going to have the highest water quality to be raised in. So, yah, it's very important to me. The last thing I want to do is have to answer questions from the Health department about somebody getting sick. The last thing I want to do. It rattles me."

[TJW Additional prompt: So, in terms of the concerns for water quality, it's mainly for the oysters?]

"Well, I mean... I'm also, I've been doing this for a long time and I've been in the game for a long time as far as people, I did a lot of work for Bristol Bay in the beginning, in the early, say six years ago or seven years, I started with the Red Gold project. Are you familiar with that? It's a video, a movie, that documents the issues that were at stake with

Bristol Bay. I went to DC and I lobbied for Bristol Bay, I have a little bit of knowledge on how these water quality issues affect our fisheries and obviously, I'm concerned, but when I see something like this year, 1.2 million salmon are returning to the Columbia, how does that happen? That's unbelievable. If it was up to me, we wouldn't have a dam on the Columbia, much less 17 of them. But, by the same token, I talk to Native Americans and they say, you know, I'm a steelhead fisherman too, I'm a fly fisherman, that's what I do. Obviously, on one end, I'm like, I don't want everyone to see a net in the river, gillnetting's wrong, blah, blah, blah, and then when I speak to the gillnetters, what are you talking about man, we're in the river a very short period of time, we go in, get our fish, and we get out. This is the best way to fish and so, when you listen to them, you're like, oh... you got to hear both sides of the story. You can never judge anybody until you understand where they are and where they're coming from. The Native Americans are just as concerned about having fish for tomorrow as we are, or more. It's their livelihood, for us, it's our recreation or eating pleasure. For them, it's the way they make their living, just like me. So, I relate to that. I relate to them. I was very affected by Jim Lichatowich's book *Salmon without Rivers*, have you read that? You should definitely read it. Probably the most influential book I've ever read on the issue, but I won't go into that."

TJW: Have you been effected by shellfish closures and/or fish advisories? If so, how often?

"Um... Well, I have ten different types of oysters on my menu, ten to 12. There were times this year when I only had two oysters and I was fine with that. As long as somebody didn't get sick, I don't care. I'll take them off the menu. And we lose customers when people come in, they want oysters, even in the summer time. The problem with vibrio, for me historically, is that by the time you know there's a problem, it's too late. You know, for example, my health inspector came on Tuesday to investigate a claim that happened two weeks ago."

[TJW Additional prompt: Discusses pilot project Health is conducting for a more proactive approach to vibrio]

"I think they should just ban oysters in the summertime, let's just stop. There's not enough oysters for those growers to grow anyway. But, by the same token, what would those people do, they can't close down and not work for two months."

[TJW Additional prompt: Discusses background in shellfish and allowing shucked meats during vibrio outbreaks, and triploid issue where plump oysters are now available in the summertime when they normally are spawning]

"That's the dichotomy of it. I used to be happy with it, but now I'm not. I don't like it. I don't think we should be doing it. And I would support a city-wide ban on oysters in July and August. I would support it. I would support a city-wide ban when water temperatures get to a certain level. Let's just... when it's not a month, it's when the water temperatures get to a certain level. And to me, they should just close it, and not try to figure out now not to get somebody sick. Just close the damn thing. You know people are going to get

sick, even if you write it on your menu, they're going to eat oysters, and they're still going to hold you accountable. To me, that would make sense. But, how is it fair to the oyster growers. There should be some sort of supplement to those guys in that industry when that happens. Some resource available, but anyway. That's very way over my head."

TJW: Do you think that other restaurants have similar issues to yours or different?

"I'll tell you, not to point fingers, but I'll point fingers at the waterfront. You know, those guys, just charlatans, charlatans, they just consume so much. People are out there and they're eating and they're just, you know, anyway. I don't need to judge. There are people that are really interested in procuring excellent quality product too, but they're not over there. So, the game changed since the oil spill and oysters that used to cost 3 dollars now cost 6 dollars and oysters that used to cost 6 dollars now cost 12 dollars a dozen and it's not uncommon to have four to five different types of oysters that cost over 11 dollars a dozen, okay. And, here's the clincher, you can't even get them. Now, you can't even get them."

TJW: [Optional]: What are your views/experiences toward/with state regulation?

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

"No."

TJW: If yes, how did you hear about this update?

NA.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

"So, everything, it's all relative. Like we talked about before, it depends on how you make your living. Basically, people, for the most part, as we discuss, first and foremost, they're mostly concerned about themselves and their industry and how they make a living. And there really is no right or wrong in this situation, I think. We've faced the same thing with this minimum wage, right. Where we would love to pay people \$20 an hour, right, but if paying \$20 an hour forces us to close our business, people have to realize that somebody's got to pay for that. So, everything like this like we progressively

move forward and towards, there is a price. And sometimes it's a big price. Are you, are we willing pay double our water bill, are we willing to pay twice as much for our electricity as we pay today, are we? We like to say we are, but when you starting paying those bills and you start realizing, this is a tough situation that we face. And, so obviously, one part of me, as a catch and release steelhead fly fisherman, I want the highest and most stringent clean water standards on earth, on the planet. As a purveyor of wild seafood, double. I want the highest quality water that science can yield. This should be pristine, we are the most advanced society on the planet, we should be able to accomplish this, right? But on the other hand, as a business man and I'm pragmatic and realistic, I understand that these things are going to be very expensive and you know, industry as it is today operates on, for the most part, slim profit margins as it is, you know finding [unintelligible] to making them change, is very difficult stuff. If it was easy, it would already be done. So, I would tell you, I personally cannot answer your question because I am in the middle of it, in the middle of both."

TJW: Do you think that there is a need for higher water quality standards in Washington State?

"Of course I do. That's obvious. I'm greatly affected by clean water, I'm greatly affected by, you know, by fishing the Sauk for how many hours and never catching a fish on the Sauk River, even though the upper watershed is in pristine condition. It's the estuaries, there's an interstate running through the estuary and people building....

[TJW Additional prompt: It's the estuaries where the salmon live]

"They don't live there anymore. And they won't ever come back, that's the thing, it's tragic. I've spent countless hours searching for that one fish and still, never, unrequited. And at the same time, these people live there. So, is it my buddy Joe, who's an artist, he says, you want to save the salmon, get rid of the people, you want to save the fish, get the people out of there. We all know it's too late, that cat's out of the bag, you know. So, I have a bunch of different opinions about this and a lot of them conflict each other. So, I would love to have our water regulated and monitored and cleaned to the highest standards that we could have. But I also know, realistically, there is a huge cost involved in all this and if we are to continue, we need to find out how we're going to pay for these things, before we force them on the public. Because Seattle is out of control with forcing their ideals and giving the bill to business owners, especially small business people. Case in point, case in point, where I used to spend \$1000 a month on water, I spend \$4000 a month on water now, kay, water. Used to be \$1000 a month, now it's \$4000 a month."

[TJW Additional prompt: How long did it take to make that jump?]

"Two years. And where did that bill come from, how did that happen? That was somebody saying, hey we've got to be more conservative with water, we got to take, even though we have plenty of water, we have to be more conservative with water, let's pass this on to the consumer, let's pass this on to the businessmen and women in the community, they can afford it. That's just one little thing, one little piece of the puzzle, I'm paying four times as much as I used to. So, this is why I'm conflicted. Cause I realize it's one thing for all the people to go out and rally for \$15 minimum wage and fight for

the poor people. That's great. That's wonderful. But when they have to start paying 30% more, unilaterally across the board, for everything they buy, they're going to be complaining about it. Because they will. Businesses won't be able to pay for it, they have to pass it on to the customers. And that's what's going to happen. So, when people are paying 30% more for their rent, and people are paying 30% more for their cereal, and 30% more for their latte, and 30% more for their gasoline, they're going to be, why are you guys charging us so much money for this? And, in the end, businesses will be vilified and, in the end, we'll be vilified and then a lot of businesses won't make it, business owners will lose everything they have, and then a new crop of business people will come in and people will realize they have to accept it. And I think it's great, you, people can vote for this, people have spoken, they want to spend more money. But when they start spending more money, I think it's going to be a different story. Just like me, I'm like yah, I want clean water, I want clean water. And they're like, yah, you've got clean water, here's your bill. What? Are you freaking kidding me? I got to pay four times my bill for water. And they're like, you know what, that's not the end of it, there's a lot more coming buddy. So, that's why I'm conflicted. If you would have caught me about a year ago, I'd be like hell yah! Hell yah, let's ratchet it down. There should not be a drop of pollution unfiltered into the Puget Sound, it's precious. There we go.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State? [Additional prompt: You mentioned this above though, you would want to make sure that the costs would be spread to the consumers, as well as the business owners?]

“Right, exactly. But, just as the people have shown with this transportation issue, they don't want to pay for it. They want it, but they don't want to pay for it. And they'll vote against it. They're not going to spend \$10 more a week on transportation. They want it, but they don't want to pay for it. And this is one of the things we face as a society as population continues to grow, especially in this region as we become the... we're the poster child of growth and the future and more people are attracted to Seattle and Washington than ever before and as our population continues to burgeon, these issues will become more and more exacerbated and more and more bubbling to the top. Very difficult. Very difficult future that we face. So, that I don't have answers to. I just have questions.”

RESTAURANTS 4

Background

TJW: How long has your restaurant been open and in area?

“Um, personally I've been in the restaurant industry for, oh geez, about fifteen years.”

TJW: How long have you been in the restaurant business?

[omitted to protect anonymity]

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?

[omitted to protect anonymity]

TJW: Is this a family business?

NA. See above.

TJW: Why did you decide to specialize in cooking local seafood?

GM: “Well, the originally concept being [this restaurant] allowed them to travel from place to place, which we still do. But then two and a half, three years ago, when we remodeled, we really took it to, away from that 1990s diner neighborhood restaurant into a seafood and oysterbar concept. [The owner], in particular, is somebody who likes to look at a neighborhood or a community and think, what's missing? What would I really want to go do if I were living here. And he's like, this neighborhood doesn't have an oysterbar. I want an oysterbar. I already have a restaurant, we should do that, what a great idea. Because of course being from [omitted to protect anonymity] and having that tie to all those ocean tide communities, and I think it's just an ingrained part of who he is. And, I too, from the bay area, from the northwest, it's just part of what we do, it's seafood, it's your everyday life. [The assistant manager] is from Vegas, I don't know how much that... [laughs]. If it grew there, don't eat it.”

TJW: What kinds of seafood does your restaurant/bar specialize in cooking?

See above and below (crab, oysters, salmon, cod, calamari, clams).

TJW: From where do you buy your fish and/or shellfish?

GM: “We source a lot from [Hood Canal oyster farm], from [large shellfish company], then [large seafood distributor], we do a lot of business with them.”

[TJW Additional prompt: So a lot of local then?]

GM: “A lot of local. We do abide by Monterrey Bay Aquarium Standard for Sustainable Seafood, yah, we do. If something is frozen, it's probably because we... unless it's like calamari that you have to get frozen, it's because we broke it down and we decided that we were going to freeze and save and do a different preparation. We want to bring it in fresh, bring it to our customers fresh. You walk into the kitchen and there's fish head going into stock, it all gets broken down, it's part of the process. Get it right out of these waters, get it from people who really care about what they're doing, and then prepare it well, and serve it to people in the neighborhood and community who know what good seafood is and they want to come here.”

TJW: Who would you say is your typical demographic in regards to customers?

GM: “Well, we have a pretty wide demographic, we're like three different restaurants, really. A diner in the morning, then a seafood house at night, and then late night we even turn back into like a bar environment, so as far as the seafood customers, those are a lot of the people who live in the neighborhood who own their homes in the neighborhood, are supportive of the growth of the community, they tend to have more disposable income, they tend to want to dine out more often, they tend to want to experience food they wouldn't make at home for their selves.”

Assistant Manager (AM): “Often starting a family, sometimes they'll have like a toddler. Or a couple that doesn't have kids yet, but they will. They might spend more money out.”

GM: “But their questions have a lot to do with sustainability and freshness. Then they go through the phases of gluten or omega 3s, whatever might be the hot button. They're very in tune with the news and what is going on.”

AM: “They're very informed.”

GM: “They bring it to us and we're like, oh we should know that.”

Restaurateur Priorities

TJW: What are some of the major issues you are dealing with as a restaurateur in regards to seafood?

AM: “That's like a big question. I remember there was a huge discussion over Dungeness Crab, Dungeness crab was going up and up and we were like, debating should we change the crab cake because of that because we wanted to make the price cheaper, and we just decided we're going to keep it small, we're going to keep it at the same price, we know that it's an amazing product, we're not going to change the quality of the fish in there.”

GM: “There's definitely a customer perception of value issue for us.”

AM: “I mean, it's a small crab cake and it's \$16 bucks, but it's delicious.”

[TJW Additional prompt: Discusses issue a retailer had in Seattle of obtaining crab recently]

GM: “And it happens every year, you go kindof through these ebbs and flows of things being more available, less available, etc. But, this year in particular was a really hard hit, for the crab especially. But the understanding of that through the community of why are you charging \$16 for a crab cake and it's because it's top quality crab. We're not going to give you a lesser quality product or buy it from somewhere that doesn't handle it responsibly just so that we can charge less. So, that's always kindof a fine line to balance when you're planning a menu and looking ahead. Especially since we rotate our menu every four months.”

[TJW Additional prompt: You focus on a different region every four months, but do you keep the seafood focus or?]

“We tried to keep the base menu very fish house oriented so that we can focus on that Northwest, what came out of our waters, what's local and available today. And then [the other] menu does maintain some of the seafood identity, but it doesn't have to be tied to it. So, we're doing [certain theme] right now. And in [that country], there's a lot of lamb and wild boar, things like that that are part of the traditional cuisine, so in order to maintain authenticity, we can't do everything in a seafood preparation. It would be cost prohibitive to the customer. You got someone coming in and they're like, why am I going to pay \$15 for an appetizer I wouldn't want because it has seafood in it. We cater to everyone.”

TJW: What are your main concerns and priorities when it comes to obtaining seafood?

See above.

TJW: What would you say are your customer's top concerns or requests when it comes to seafood?

See above.

TJW: Does water quality affect or come into play in determining from where you purchase your seafood?

“Absolutely.”

TJW: Have you been effected by shellfish closures and/or fish advisories? If so, how often?

GM: “Red tide comes through. And luckily we work with purveyors that take pride in knowing what's going on, they're very responsible. They let us know first. They usually go through the work of sourcing other beds or going to different purveyors and growers and saying, my customers need help. Or saying to us, I can't do this, but call these guys. But yah, the water quality is huge, because if it's not coming out of fresh water, then it's not actually that fresh.”

AM: “Or sometimes we just won't carry it. Change the menu. Because we reprint the menus in house, so we have that flexibility. If something's going on with something, we'll just take it off the menu and that's happened, I've been here four months, and that's happened since I've been here.”

[TJW Additional prompt: Does that happen due to price, like perhaps with the crab, or with more the oysters?]

GM: "It's usually oysters, but then there's also products that we won't bring in flat out because they don't come from an area that we can even fact check. If we don't know how it's being handled, then we're not going to bring it in."

TJW: [Optional]: What are your views/experiences toward/with state regulation?

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

"I do not."

TJW: If yes, how did you hear about this update?

NA.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

GM: "Wow." [in reference to the 6.5 grams a day]

AM: "I never had oysters for like 30 years, but then I moved here and I have them multiple times a week."

AM: "That's a lot, a lot of fish" [in reference to Oregon's and Washington's proposed 175 grams a day]

AM: "So, those are the two options?" [in reference to Inslee's proposal versus the current standard]

GM: "That's not a lot to choose from."

TJW: Do you think that there is a need for higher water quality standards in Washington State?

GM: I think there's definitely the need to at least set the bar higher than it's been. I know that we've done a lot of fundraisers with the Puget SoundKeepers, especially with the coal train coming through. There's just no reason to treat the oceans like they don't matter. Ocean acidification's becoming a real issue that's in the next, you know, five years going to probably gain a lot more momentum and be more in the limelight of what's

happening to our waters. It has to do so much with the way the entire world works as an organic being, almost. To say that it doesn't matter because certain industries might have to charge more is just completely unfair. It's putting everyone at risk for the cost of making, what, toys, it doesn't make sense."

AM: "I think it's just... I totally agree, you said it very well, it's just part of the Pacific Northwest nature already and that's not going anywhere. If we want that to continue, we have to protect it. And if that means that a piece of fish is more than a filet mignon down the road, then so be it. If you want a good piece of fish, this is what it's going to cost.

GM: "And I think all the markets are going to skew, so it's not even going to be that markedly more expensive than everything else because everything's going to get more expensive."

AM: "It kind of plays along with that Dungeness crab cake, it's just almost a glimpse of what is to come. It's like the people that know it, I always tell people, I'll do a little hand motion, and it's either one way or the other. Some people are like, oh, that's fine because they get it and other people are like, that's it. And it's like, we could put a ton of breadcrumbs in it and make it 6 bucks for you, but we're a fish house. It's not what we're about."

GM: "That's a panko cake."

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

GM: "I mean, it's all going to get tied up in red tape. It seems like so much more about politics and where the dollars land than what the actual outcome of the initiative is. So, I think that's going to be the stumbling block, getting through all the bureaucracy."

AM: "What a huge injustice that's been going on for so long to really believe that people have been eating half an oyster a day."

GM: [laughs] "I need to cut back."

AM: "It's almost like, you should have seen this coming and you should have saved money for this time, because that's just ignorance. You know that's not true, you know they're going home and eating salmon."

RETAILER 1

Background

TJW: How long have you been in the seafood industry?

[omitted to protect anonymity]

"I originally was working at a commercial fisherman. And then I transitioned, I was briefly a commercial fisherman, and then I transitioned into working in seafood retail and wholesale establishments."

TJW: How/why did you get into the seafood industry? [Additional prompt] Why did you get into being a commercial fisherman and why did you make the transition?

“Commercial fishing was something that I had heard about that was a great adventure that I thought was super cool and I really wanted to check it out. You know, Alaska, the last frontier, and all that.”

[TJW Additional prompt: So you were up in Alaska doing commercial fishing, not down here?]

“Yes. It was in Alaska and then I just sort of backdoored my way into working in seafood establishments using my experience when I needed a job and got a job doing seafood. So, I just kind of fell into that way.”

TJW: Are you from this area originally?

[omitted to protect anonymity]

TJW: What kinds of seafood do you sell?

“We sell an enormous variety of seafood, fresh and frozen products. Again, mostly focused on Northwest products but we do bring in south pacific products through brokers and things like that. I've got frozen tiger prawns from Indonesia, we've got that stuff too.”

[TJW Additional prompt: If you had a percentage, what would say in terms of Northwest?]

“As far as seafood? I would say probably 80%, something like that.”

[TJW Additional prompt: Is the majority coming from Washington or British Columbia too or?]

“Yes, I would say probably the majority would be Washington, British Columbia, followed closely by Oregon, Alaska.”

TJW: How do you primarily sell your seafood? [Prompt] Is it online, retail store, wholesale?

“It is... we do a pretty brisk retail business, but it is primarily wholesale. And that essentially is accessed via the telephone mostly. We don't do internet really, we do a fair amount of email correspondence.”

[TJW Additional prompt: But you are mainly shipping or trucking it wholesale?]

“Yes.”

TJW: What or whom would you say is your biggest market for both your wholesale and retail? [Prompt] Would you say WA, this region, national?

“It is regional.”

[TJW Additional prompt: So Pacific Northwest?]

“Absolutely. Basically the Puget Sound region and the Olympic Peninsula.”

TJW: To which county or counties do you sell the majority of your seafood?

“It's pretty well distributed. Jefferson, Clallam, Kitsap and then King would be the main ones.”

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood retailer and wholesaler? What would you say is your top priority?

“My main concern as far as fishery management?”

[TJW Additional prompt: Everything. In terms of day to day, what are your main priorities and goals and concerns. And it might be different in terms of retail versus wholesale?]

“Well, there's a lot of concerns. I would say one concern is you know, health of local fisheries, it's a huge part of what we do, it's our niche. Our connection to local fisheries is really what we do best and why our customers largely come to us. It's not our Indonesian tiger prawns, so to speak. The other issue would be, um... you know, just remaining price competitive, being able to stay competitive in the market with some much larger competitors. We are concerned about government oversight, whether it gets too aggressive, which can turn into, you know, difficult expenses and things like that.”

[TJW Additional prompt: Just in terms of regulations?]

“Yah, potentially. You know, over regulating, not that it's happening now, but it's a concern. Again, just looking... the FDA kindof got into the business, I guess it's been over a decade now... if they continue to ramp things up, it potentially can make our facility upgrades necessary, that kind of thing.”

[TJW Additional prompt: Just in terms of temperature control?]

“Right.”

[TJW Additional prompt: I know that there's been a lot of changes in the last decade.]

“At this point, we've kept up. But if they were to really turn up the steam on that, it could get difficult.”

TJW: Would you say that other seafood retailers have similar issues or different?

“I think some people share issues. I think there's a difference between being a small company as opposed to being a much larger company and I think that some of those concerns are shared and some are not.”

TJW: Are there other issues they might have then? What are some of the other kinds of issues that seafood retailers in Washington are facing?

“Well, as far as the competitive issue, a lot of corporate chain type of establishments like to create deals where they can make a deal with one vendor that can take care of all of their facilities so they're moving away from smaller vendors. Again, going into the government potential, of course, a big large company has a big large fabulous facility or potentially could have, so sometimes that is not an issue for them that could potentially be an issue for a smaller outfit. And then I think what we share is logistical, being effective, being efficient, vehicle maintenance, a lot of stuff like that.”

TJW: Have you been affected by shellfish bed closures or fish advisories? If so, how often?

“We are definitely affected by shellfish closures. I would say that's the probably the biggest effect that we feel. Fishery closures, at this point, haven't been so pronounced that, you know, if they're not doing Neah Bay, then British Columbia [is open]... Other than just obvious seasonability, in which case we are affected, but that's just planet Earth.

[TJW Additional prompt: So, it's more seasonability of fish runs, rather than any kind of closures for toxicity or anything like that.]

“Yah, haven't really ran into toxicity of fish issue that really affected or played a role in our immediate purchasing.”

[TJW Additional prompt: And with shellfish, it's more about vibrio and biotoxins?]

“It is, but occasionally it will be storm...”

[TJW Additional prompt: Fecal?]

“Yah, so that's one that has happened on more than one occasion.”

[TJW Additional prompt: Do you just not carry the product or go to a different region?]

“We have different areas and we go to a different area until the Health Department determines that that area can reopen or not. Actually, I'll have to say that it's really efficiently and effectively managed by the Washington Department of Health. They really do a great job, just as far as government oversight or agencies. They are on top of their game.”

[TJW Additional prompt: Discusses risk-based vibrio program that DOH is testing out right now.]

“I think that could be a really good idea, in the sense that that I think a lot of the vibrio problem potentially could come with the handle of the product. Which they are doing a really great job overseeing that, but some companies do a better job than other companies with the temperature controls right off the beach. So, I'm sure there are certain areas where that four that closes that whole area, not one of them came from a particular harvester.”

TJW: What would you say are your customers' main concerns and questions regarding your seafood?

“Local is huge. That is what is what they are coming for. We don't just do seafood here, we do beef, pork, we do chicken. We have a lot of local and regional suppliers here too and that is, again, 80% of everything that we sell [is local]. That's what they are coming for.”

Chinese Ban of West Coast Shellfish

TJW: Were you at all affected by the recent Chinese ban of west coast shellfish that occurred in December?

NA. Sells to PNW region (mainly trucking in WA).

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“I do not.”

- *If yes, how did you hear about this update?*

NA.

- *What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?*

NA.

- *Do you agree?*

NA.

- *If no, [then provides brief background] what is your perspective on this issue?*

“So, you're basically suggesting, if I'm following correctly, that water quality is being judged through food source for human consumption and that is somehow an equation of volume to how sick you can potentially get from consuming this product?”

[TJW Additional prompt: Discusses yes and that it is toxicity levels over a lifetime for each toxic.]

“So, the goal would be to keep toxicity levels low enough that consumption levels could be realistically measured and people's rate of cancer would remain low.”

[TJW Additional prompt: Continues to explain about different toxics that are tested and how this is long term accumulative effects.]

“My concern would be one, if you up the rate, I would think this would be the shellfish [grower's view], is that potentially an area might be deemed dangerous that is potentially

not dangerous now, which would close certain areas. So, I wouldn't be excited about that. I would say that I would be excited about the idea that more industrial type polluters would be held to a tighter range as far as further diminishing the health of the coastal region, rivers for salmon, spawning and all that, as well as shellfish. So that, I guess I would probably land right squarely along with the tribes and the shellfish growers as far as my position. We also sell a lot of shellfish, so that's a big deal. But also I think it does reflect the health of the waterways, I'm not super aware of industrial polluters and their issues, I know that the [nearby mill] is a big deal. You know, I think I would suggest that reasonable realistic goals should be placed. It seems to me that the large industries are always asking for more and then, you know, so I don't think we should just hand them everything on a platter. But maybe something that gives them a period of time to improve."

[TJW Additional prompt: Discusses variances as part of the rule, which will be released with the rule at the end of the month.]

"So, I guess in support of that. And yes, I'm just concerned in redefining things in such a way that areas that are considered healthy now become considered unhealthy and I don't know what that threshold is, but... You know, it's not like there's not a single beach that maybe shouldn't be addressed, but overall, I would like to think that what's considered healthy now would be considered healthy tomorrow too."

TJW: Do you think that there is a need for higher water quality standards in Washington State?

"I think so. I think we need to defend the integrity and potentially improve the integrity of Washington waterways. I think there's a lot of interSound rivers that could really gain and we could really see a resurgence of natural... and seafood oriented life. Not just for commercial, but for the health of the river itself. Recreational enjoyment. So, I'm for water quality controls."

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

"Barriers? Above and beyond industry, I think we talked about it with fecal matter and whatnot. I think that urban and suburban development is a huge problem and I think that should be addressed, along with industry. You know, I'm not suggesting that houses get broken down, but potentially when developments are planned and put into place, that these things are thought about and addressed."

[TJW Additional prompt: Discusses issues that shellfish growers have raised that he has raised and then TJW's personal views toward this being a great time to be proactive in putting controls in place.]

"One thing that I will mention, which is something that we bump into here, but that is, to streamline the whole oversight process, in the sense that when you have five, six, seven, different public agencies that are potentially in charge of implementing these actions, there's a lot of one, redundancy, but two, different commentary and different decisions that are suggested or made by the different agencies."

TJW: [Additional prompt] So, in terms of Department of Health and?

“I’m just thinking like if Department of Health did go to toxicity [testing], maybe they should be involved. They’re doing a great job with toxins, why couldn’t they do that kind of thing?”

RETAILER 2

Background

TJW: How long have you been in the seafood industry? How/why did you get into the seafood industry?

[omitted to protect anonymity]

TJW: What kinds of seafood do you sell?

“We are primarily Pacific Ocean from Oregon up through Alaska, and out to Hawaii. About 90% Pacific Ocean.”

[TJW Additional Prompt: What percentage comes from Washington?]

“At least half. All of our shellfish, including crab, when I say shellfish. So, crab, mussels, clams, oysters. The salmon, obviously, wherever those are is we go and get them. The season will start in Alaska, in Copper River, and then work it’s way down here. Right now, we’re pulling all of our cohos, most of our kings in Washington. And the sockeye’s, we’re still getting some Frasier River stock.”

TJW: Where do you fish and/or grow your shellfish? Or from where do you buy your fish and/or shellfish?

NA. See above.

TJW: How do you primarily sell your seafood? [Prompt] Is it online, retail store, farmer’s market, restaurants...?

“It’s all [retail]... we do a little bit of wholesale, not too much, but we also ship across the US.”

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

[omitted to protect anonymity]

TJW: Is this a family business?

“It was kind of a natural progression without, you know, getting too far away from what I know. I tried a couple of other businesses, always ended up coming back to seafood.”

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

“Retail.”

[TJW Additional prompt: So you ship nationally, or internationally?]

“Nationally.”

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

“Our biggest is the walk-in. The internet does good, it's spread all over the US. When I say all over, we ship to all 50 states. I'd try to track that, but I can't find it. I was going to do some advertising in some of those zip codes, but it's so spread out that [there's] just no zone I can target.”

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood retailer?

“Right now, it's crab. Crab is one of the big issues. One of the big local crab companies that used to purchase the live crab and cook them, tried to make a move that went disastrously, they're gone. So, we've got people from California coming up with truckloads and suitcases full of cash and they're just buying crab off the docks and trucking them down the coast. I've haven't been able to get fresh crab for two months. We only carry previously frozen.”

[TJW Additional prompt: So, you've been mainly looking at crab in terms of the [Puget Sound] area?]

“Yah, we've got the crab three miles out, I can go catch them, but there's nothing available. They get bought up at the docks and shipped down the coast.”

TJW: What would you say is your top priority?

“Well, just making sure we've got a full, what I call, arsenal of products that we can get access to so that our customers have a lot of good choices. You know, freshness, time of the year where everything's in season, we push that hard, it's a lot of quota based fisheries these days, which is great, because they can kinda slow it down or speed it up, it gives us a bigger window. The halibut is a prime example of a new type of operating of a fishery. About ten or 12 years ago, they put it on an individual fishing quota, as opposed to a shotgun start, that was a great move for retail because we used to just get fresh halibut about two or three times a year, it was available and then it was gone again for two or three months or four months. And also, the processors couldn't process all the halibut that was coming to the dock. They had all this fish at once, well what they did was take an average of what a fisherman's catch, if you know this, just stop me. Well, each fisher was given a five year average of their own catch and that's now their quota for the rest of their lives, that quota's attached to them with a permit, so they have the right to sell it or keep it. If they keep it, they can go out, and let's say it's a 100,000 pounds, they've got from usually right around mid April right now, early April, they'll open it, but they have until end of October, middle of November, whenever the halibut commission decides to close

it to catch that 100,00 pounds. So, with all these different people's permits and that whole large range, we've got fresh halibut that whole year, so that was just a brilliant move, a really good move. It was tough to get it started, there's always some people that are going to get caught up on the bad side of it in the very beginning, but some times you have to sacrifice. The reason why I know more about this, is because [I know someone who was one] of those guys, but he was young, he'd only fished for two years of that five years. So, we lobbied to the halibut commission to say hey listen, can we take him on a two year average or take those two years and act like he caught that the other three years. And they just said flat out no, we're only going to divide his two years by five, so he really got screwed on the quota based. But he was a very much in the minority, there was only a handful of guys like him, probably a dozen. Just by timing, if you were fifteen years old and you didn't even know you were going to be halibut fishing in two or three years and all of a sudden you get into [it], you graduate high school and go out, but in the meantime, the commission said, hey, we're going to start on this date. And you walk into this situation, going well, wait a minute, I just got here. And they were kindof like, well, we don't care about that. They had to draw the line in the sand somewhere and that's where it was."

[TJW Additional prompt: But overall, it's been a positive thing as it's allowed you to have halibut over a longer period of time]

"Oh yah. Well, I always get customers coming in and they always want it fresh, nobody wants it frozen. But I have to tell them, sometimes it's just impossible to get it fresh, it's just not in season right now. So, now, at least with the halibut, instead of being hit or miss throughout the year, now I can tell them, hey it's fresh from late March or early April until about November 1st, so then we just tell them all winter, yah, it's been frozen before. And it's also, for the fishermen, security and safety, knowing they don't have to go out in the middle of Alaska, well Alaska gets pretty gnarly weather, and they got to go fish in December, it's dangerous. I thought it was really good timing, really good."

TJW: Would you say that other seafood retailers have similar issues?

"I think so. I talk to a lot of these guys, it's a pretty small industry. We've all got about the same issues. Crab's been the big recent issue, but it's more of a localized thing. There's this one big company that was buying up all these crab here and distributed it us, tried to move to a cheaper location and got caught up in some kind of tribal dig and they had to stop the construction on their building and they lost everything. I think they're doing oysters now, crazy, so it's gone."

TJW: What are some of the other kinds of issues that seafood retailers in Washington are facing?

NA. See above.

TJW: Have you been affected by shellfish bed closures or fish advisories? If so, how often?

"No, we're pretty lucky. I've got a lot of vendors, and so when we rarely do get a red tide out here, or [North Puget Sound] shellfish is in a [unintelligible] bay up in [North Puget

Sound], but they don't have sewers up there yet. I'm surprised with that big farm up there, they haven't pipelined in the sewer, a lot of the sewers are on septic, so have the overflow, heavy rains overflow the tanks. And all of a sudden the water, the runoff, goes into [North Puget Sound area]. So, they've had to shut down before. There's also a group out in Canada that does mussels, so we just have to switch over for a week or two while the water gets cleaned out. It's pretty rare. I've had it happen about three or four times over the last twenty years where I've had product on the shelf and they called me up and say pull it. And we go, wow, okay we have to go pull everything off and get it back to the distributor and that's it. But the Washington State shellfish tagging program is very successful. It's pretty good where they know which area got hit, they know, so you know where it came from and where it was affected.”

[TJW Additional prompt: So, all closures then have been shellfish then?]

“Yah, that's all shellfish. I've never heard of a red tide affecting a crab fishery yet. But we have had mussels, not even clams, I've never had a clam issue, but the mussel issue has been the big one.”

TJW: What would you say are your customers' main concerns and questions regarding your seafood? [Additional prompt: You had mentioned is it fresh, not frozen]

“Yah, they're also worried about sustainability. Our motto is 100% sustainable and fresh and also wild, as much as possible. People are learning more and more about the farmed fish and some of the side things that come with it that might not be healthy, don't know where it came from, you don't know what that fish was fed. Which, if it wasn't raised in the US, under our strict food regulations, you know, it might be coming out of a country that doesn't care what they feed it, and you and I eat it and all of a sudden, we get cancer, you know. So, it's... the farmed fish are a whole different animal. Some people who hear farmed, they walk away, end of story. With that though, I think we do need to some farmed to help sustain the wild harvest. I think the salmon, between the hatchery and farming, it hasn't been all bad. They're finding out now about some of their farms, with their extra food going to the bottom of the ocean, that's not good, maybe they need to put those in different locations, have more control over what comes out of it. What does that food go? We'll see. I was watching a special out of Canada where they show this dead zone, because of all that wasted food from the fish farm created a layer on top of the nice healthy ocean floor, that's now nothing down there, it snuffed it out, suffocated it.”

[TJW Additional prompt: Because of the atlantic farmed salmon? There's a huge industry within British Columbia]

“We've got one right here too in Puget Sound, it's three miles from here.”

[TJW Additional prompt: I know there's one up near [North Puget Sound area] is that the one you're talking about?]

“No, there's another one, right by us, on the backside of [local island]. If you go to [Puget Sound town] and have a boat, you'll go right by it. We'll see, I don't know how much research they've done on that particular farm, they should now that they know what happened in Canada, you'd think they'd be out there checking the ocean floor. I haven't

heard much about it, I think those guys try to keep it pretty quiet that they're even there. Keep it off the radar.”

[TJW Additional prompt: Do you think the sustainability focus is due being this specific area?]

“Yah, sustainable is a big issue out here in this neighborhood. It's pretty upper middle class area, it's educated people. They're... just the northwest in general is a very hyper sensitive region. I go travel to the south or the east coast, mid west and they just don't seem to care as much about it, so it's good in the regard to long term, but it can be tricky sometimes because you get somebody with a personal agenda politically. We've got a lot of people asking a lot of questions around here. It's not bad, it's just you have the answers and you have to make sure you're playing by the rules that they want you to play by, otherwise they'll boycott your store.”

TJW: [Optional]: What are your views/experiences toward/with state regulation?

NA.

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“Not at all.”

TJW: If yes, how did you hear about this update?

NA.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

“Is that daily consumption? Well, that's good for us. I like the new proposal if that's what he ends up going with, I don't know about dropping it to one in a hundred thousand, I guess as you say, it's moving the decimal point over, which is tricky. Most people don't do the math on that anyway, but the good thing for me is on the first side of that equation, the two part equation, raising it up to 8 ounces. Because we also serve here as our main course 6 to 8 ounces, so if he can keep it at 8 or higher, then we can say, yah, you're under that. We can honestly look our customers in the eye and say, hey, we're serving you less than that. So, that would be a good thing where have you had said half an oyster or one oyster, how am I going to sell one oyster shooter and somebody thinks they're

going to get cancer? So, that would be good for us, if they raise that standard a little bit. And you know, I'm a boater and I kayak a lot, I get on the water, I walk the beach, I try to walk the beach every day, so I want a good clean Puget Sound, and I think we're doing a pretty darn good job considering how many people live here. I mean, you always want to strive higher, but I think the marina's done a pretty good job. We got a lot of that tidal currents coming in and out of here from the Pacific Ocean, so I think we're doing a pretty good job. Of course, there's that long arm of Hood Canal, that's a tough one, they need to figure something out, need to pump some water over the hill there [laughs], flush it out the other direction."

[TJW Additional prompt: From that area, not quite at the bend, a little further up]

"I go camping out at Dabob Bay, so there's a lot of currents there, but one year I took the boat all the way to the [unintelligible] and I was like, oh my gosh, this is a long ways. You can see that little bit of water that's going back and forth, back and forth, getting hotter all summer, and it's like, you'd almost think they could pump some water over that hill, because it's not that far. It's about a three foot hike, pump the water up and over, start pushing that water out of there, it's still nice salt water, just get it moving. I don't know, cause I'm half crazy [laughs]."

TJW: Do you think that there is a need for higher water quality standards in Washington State?

"I think they're doing pretty good. I think they need to make sure it doesn't get any worse than it gets right now. Whatever it is right now, we got to make sure we protect that because I think there's enough global warming issues going on, where's there softer oyster shells, so yah, I think... Like I don't even know, right now, if someone were to come to me right now with an investment idea in a shellfish farm, that would be the one zone I would stay away from that at the south tip, I would stay up closer to Dabob Bay, I wouldn't invest in that further end, just because of that hot water."

[TJW Additional prompt: Ocean or Hood Canal?]

"Hood Canal. I think if you could stay north of that bend, going toward the Dabob or out toward Port Townsend, go out that way and it's fine. But I wouldn't invest further in anymore, I think that's where a lot of issues are going to happen. Especially when getting into a hot summer. I couldn't believe there wasn't more problems this year, for as hot as it got for as long as it did. But I remember last year on the news seeing a lot more issues than we saw this year, which was pleasant. I was glad, I was really worried when it was 85 degrees for three weeks straight. I was like, oh God, here comes the Hood Canal news, but it didn't happen."

TJW: What do you see as potential barriers to higher water quality standards in Washington State? [But you're saying that we're doing pretty good right now]

"No, I just think monitor the ship traffic, I think they've got bit container ships coming down to Tacoma, Seattle... [small interruption] So, I think we're good on the water quality. If we could just keep it where it is now and just watch, especially in the summertime when you don't get as much rainfall, a little bit of that more natural cycle of

water coming through. I think just watch the shipping traffic, there's a lot of big container ships coming in and out of here, make sure they get that water ballast outside of a certain zone. I think they're pretty aware of it, a risk of a, what do you call it, a different shellfish coming into here.”

[TJW Additional prompt: Invasives?]

“Yah, there's a lot of those blue mussels from Japan I would see out in the ocean when I was commercial fishing out in Alaska, we'd get some of the, we'd pick up the glass balls with the ropes, whatever else was out there, they'd have all these weird mussels growing on them I'd never seen before. This is really close to our shores, so I think those container ships coming in and dumping water here is a bigger risk than I think they've looked at.”

[TJW Additional prompt: Do you sell the varnish clams? Just out of curiosity? They're an invasive from Japan that I've heard of some growers starting to sell]

“Yah, I stay with the [North Puget Sound], local mussels, I don't have those yet. But we'll see what happens, if they put them on the open market, maybe if people are asking for them. But, right now, we have [North and Mid Puget Sound oysters and mussels] local, fresh, and that's what we like to stay with.”

RETAILER 3

Background

TJW: How long have you been in the seafood industry? How/why did you get into the seafood industry?

[omitted to protect anonymity]

[TJW Additional prompt: Why did you decide to get into the seafood industry?]

“I was looking for a job and it turns out I like it.”

[omitted to protect anonymity]

TJW: What kinds of seafood do you sell?

“Well, I don't know all the kinds of seafood we sell, but oysters, smoked oysters, salmon, black cod, shrimp.”

TJW: Where do you fish and/or grow your shellfish? Or from where do you buy your fish and/or shellfish?

“That would be a market question [laughs]. I'm not involved with the [associated seafood market]. That's all I do is process. The market, it's up to whatever they want to sell, they get things from all kinds of different areas, plus they take our fresh product and sell it also.”

TJW: How do you primarily sell your seafood? [Prompt] Is it mainly retail?

“No, we have... there are places all around the world that we sell to.”

[TJW Additional prompt: Would you say primarily nationally then rather than local?]

“I’m not involved with sales, so I really can’t tell you. I know it goes all over the place. Like most of the stuff gets shipped back to [the main store] and they take care of the distributing, wherever it goes.”

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

[omitted to protect anonymity]

TJW: Is this a family business?

[omitted to protect anonymity]

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

NA. See above.

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

NA. See above.

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood retailer? What would you say is your top priority?

“I’m not sure what I can say to that one.”

[TJW Additional prompt: Things that come up every day, that you concentrate on or worry about, production issues?]

“I worry about all that, that’s why I don’t know how to answer that.”

[TJW Additional prompt: What is your primary, main concern?]

“Sanitization of the individual crew members and the production areas, throughout the day.”

[TJW Additional prompt: So that’s your main concern?]

“During production, especially, we put out a ready to eat product.”

[TJW Additional prompt: What type of seafood are you processing here now?]

“Right now, it’s shrimp, but we have done a little bit of salmon a couple times so far.”

[TJW Additional prompt: Do you cook that here?]

“We don't cook the salmon [but they do cook the shrimp]. We just head and gut it and then they ice and ship it. The market has fillets, we do a little bit of that here.”

TJW: Would you say that other seafood retailers have similar issues?

“I would think so, yah.”

TJW: What are some of the other kinds of issues that seafood retailers in Washington are facing?

NA. See above.

TJW: Do you buy a lot of shellfish?

“The [associated seafood markets] do.”

TJW: Have you been affected by shellfish bed closures or fish advisories? If so, how often?

“I really don't know.”

TJW: What would you say are your customers' main concerns and questions regarding your seafood?

“Most of the market customers, go to the [associated seafood market], they don't come over here. If they come to this plant over here, I have to require that they sanitize correctly and everything before they come here. Right here, it's not as a big an issue, but toward the production area. I can't just let everybody in here. But I do deal with vendors and stuff with that. They all ask questions, so cause they're all trying to sell something. But [the main store] already has many many vendors that we already deal with, I don't know if they're planning on changing vendors. I'm speaking mainly of people who give us our box parts, our liners.”

TJW: [Optional]: What are your views/experiences toward/with state regulation?

NA.

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“I don't know whether it's the old ways or the new ways, but once a week and monthly, I take waste water samples, during our production. And stormwater samples too.”

TJW: If yes, how did you hear about this update?

NA.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background] what is your perspective on this issue?

“How would they determine how much a person eats on an average? I eat a lot.”

[TJW Additional prompt: Discusses fish consumption rate, cancer risk rate and then how industries are worried it will cost them additional money to meet new standards.]

“Well, it will. The bigger you are, the more waste you'll have. That makes perfect sense.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“I don't think there's a need for any kind of higher quality standards, but I'm not the guy that pays the bills. So, in my opinion, I'd just as soon continue on with the regular standards for everything.”

[TJW Additional prompt: In terms of your own company?]

“Yes.”

[TJW Additional prompt: And in terms of other companies]

“Well, I think we all need to abide by it, cause it will be helpful for all. But I don't have any control over other companies. Just this particular one.”

[TJW Additional prompt: Continues to discuss draft rule.]

“Well, I know as far as our wastewater here in [coastal town], all the companies all around this Bay are all combined into one unit where if there are too much solids get out into the [local bay], then they will start looking at individual ones, because I have to keep records of our plant. But it's all combined, joint effort you might say. But if it goes over a certain limit, then they start looking at individual companies to see who's going over the limit. And then that permit could be revoked if that happens. But everybody is supposed to be keeping records, whether people up and down the [local bay] are not, I don't know.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State? [But you were saying that you think the current standards are fine?]

“As far as I know, they're fine, but I don't know all the details either. I just try to maintain the best I can and if I get told we're doing too much, I try to think of a way I can reduce the solids and things like that. So far, I haven't had a problem that I know of.”

[TJW Additional prompt: Thinking more of your own plant, rather than other plants].

“Well, if we get told we're getting too much, then, of course, the EPA and those guys will come in and decide who is putting out too much. May be us, may not be us, that kind of thing. So, I am kinda concerned with the other guys, making sure they're doing okay, but I don't have any way of knowing that, you know.”

RETAILER 4

Background

TJW: How long have you been in the seafood industry? How/why did you get into the seafood industry?

[omitted to protect anonymity]

TJW: What kinds of seafood do you sell?

“Depends on the time of year, but almost all year round, we have oysters and clams and crab when obviously in season. And then, fish, so mostly salmon, some tuna, steelhead which is salmon, I guess. And I'm learning all the different names and seasons for it.”

TJW: Where do you fish and/or grow your shellfish? Or from where do you buy your fish and/or shellfish?

“Local fishermen, so when it comes to fish, it's a lot of tribal members will just call us up if they got a good catch and they bring it by and we weigh it out and we pay them.”

[TJW Additional prompt: Where does your shellfish come from?]

“We use a couple of different places. [Larger shellfish company] as well as [local Puget Sound shellfish company]. And it just kinda depends on pricing as well as availability and some times a little bit of quality difference. I know [local Puget Sound shellfish company] doesn't always have stuff available based on how they harvest.”

TJW: How do you primarily sell your seafood? [Prompt] Is it online, retail store, farmer's market, restaurants...?

“It's right out there. We have plans for online, but not for any fresh stuff. We'll be selling, at most our smoked salmon. Which is the salmon that we get here that we send to our smoker. We work through [local fish smoker] in town, they're just amazing.”

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

[omitted to protect anonymity]

TJW: Is this a family business?

[omitted to protect anonymity]

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

“Good question. We're learning, but it's mostly local community. A lot out in [this neighborhood], but then people learning we have a rep for fresh local stuff. So, a lot of people in [nearby Puget Sound towns] will come out here. We will get a lot of call like do you have such and such available right, okay I'm on the way. And then in the tourist season, we do more than just the community, it's visitors and I think a big draw is that we clean the crab, kill and clean the crab for them, we fillet the salmon for them, and so we have our summer staff which are 18, 20 year old kids that are filleting for the little kids. A lot of times, they'll have a little crowd around them.”

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

NA. Thurston.

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood retailer? What would you say is your top priority?

“For seafood? Availability is probably the biggest and keeping things fresh, especially with salmon, making sure we have it fresh and enough for people. So, we ran out a couple times during the season. So, I would say sourcing it when we need it is the biggest thing. Other than that, definitely how the community to react to it. I'm specifically thinking with the oysters and clams, we get a lot of feedback from, especially when we have two vendors, some people will like a certain one better than the other, or this batch of oysters is delicious. That sort of thing, so we try to listen to people. A lot of our staff, especially during the summer, are big seafood nuts, so they'll weigh in and do taste testing. Shuck some oysters. Availability and then the taste.”

TJW: Would you say that other seafood retailers have similar issues?

“Your guess is good as mine. I would say taste is always the thing. Additionally, because of in terms of the reputation we have and where we are in the community, the localness, we could always have salmon on hand if we sourced it from not so very very local. So for us, it's a matter of, when I say sourcing it, the [local tribal] guys are catching it right out there, are they catching right now? Cause we can always get salmon shipped in, but that's not really what we do.”

[TJW Additional prompt: So you guys don't really work with a lot of distributors?]

“Not really. It's mostly fishermen pull their boat up and unload a barrel full of fish.”

[TJW Additionally prompt: So is it a lot of education that you need to do about seasonality or are people pretty educated about that already?]

“Yah, a lot of the locals are fishermen themselves, so recreational. So, they know when certain, when the coho is running, or when the king is running, or not, as it was this year, it was not a good season. A lot of people are pretty well informed in this community.”

TJW: What are some of the other kinds of issues that seafood retailers in Washington are facing?

See above.

TJW: Have you been affected by shellfish bed closures or fish advisories? If so, how often?

“Not that I know of.”

TJW: Would you say that water quality comes in to play when you are purchasing seafood?

“Yah, that's not something we ask about.”

TJW: What would you say are your customers' main concerns and questions regarding your seafood?

“How local, how fresh.”

TJW: [Optional]: What are your views/experiences toward/with state regulation?

NA.

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“Not in any kind of detail, I've very vaguely heard about it.”

TJW: If yes, how did you hear about this update?

“No idea.”

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue? Do you think that there is a need for higher water quality standards in Washington State?

“Um, okay. So, I would have to say, without seeing more data on it, it would be very hard for me to render an opinion. Because I understand both sides of the issue. Obviously, you don't want to have pollutants in the water and you want healthy shellfish, but I understand that it's also unrealistic to have pristine water where we want businesses to go do what

they need to do. It would be very hard for me to weigh in on all of this. Because how does that affect price of seafood, how does that affect price of everything else we do in our lives?”

[TJW Additional prompt: So those would be your main questions, how does this affect price?]

“The industry, price, um, certainly quality of fish if there was a significant decrease in the taste or the demand, I guess would be a better way to say that, the demand for shellfish, for seafood. That's what I would be interested in as a business owner, demand, price, things like that.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

Asked above, but not answered.

RETAILER 5

Background

TJW: How long have you been in the seafood industry? How/why did you get into the seafood industry?

[omitted to protect anonymity]

TJW: What kinds of seafood do you sell in the market, what kind do you sell in the restaurant, if different?

“Basically the same, take the menu if you want to when you leave, we have paper copies. Dungeness crab is by far our most important product with both sales and profit. It's less profitable than it used to be just because the amount we have to charge in order to... we just can't get a reasonable margin and so it's more just part of the mix. It's still most important in terms of sales volume and we sell a lot of, crab cakes is our big thing. Since crab is so expensive, it's like gold, you can't let a drop go to waste. But crab also doesn't freeze very well. And so, what we do is we shake it out.”

[TJW Additional prompt: You do that here?]

“Yah, we have to. You'll get a lot of smaller crab, the ones with missing legs and stuff that don't sell and those get either shaken out to either sell as meat or some of it does get frozen and that's adequate for making crab cakes out of. So, tuna is a big thing in the late summer and early fall, that's just sort of wound up. Salmon is not a huge thing, but it's like the iconic product, so people want it. We buy hardly any gillnet fish, but we do buy troll, ocean troll salmon from some fishermen. We buy clams from the bay, manila clams, steamer clams, we buy oysters from, we actually get them from, did you say you were from [local coastal town]?”

[TJW Additional prompt: From Hood Canal, but I'm definitely familiar with that town]

“So, we get oysters from there. The stuff that we... kinda people expect that we can't get direct or just aren't local, like say scallops, we buy through a distributor in [Oregon town]. And that's [unintelligible], we don't make any money at that basically. And razor clams, we get through a distributor cause there's not a local commercial supply for it.”

TJW: Where do you fish and/or grow your shellfish? Or from where do you buy your fish and/or shellfish?

“Majority is sourced locally, yah, especially by sales volume. So, the big ones would be crab, tuna, oysters, hard shell clams, and salmon, probably the five ones we get direct.”

TJW: How do you primarily sell your seafood? [Prompt] Is it online, retail store, farmer's market, restaurants...?

“It's mostly through the restaurant and the market. I have eternal plans to do more email shipping, but we also sell some canned product too. In fact, we're excited about we're getting, we found a new distributor through my manager's canner, through [her] husband over in Astoria. We're actually having our own fish canned. In fact, we just got a bunch in.”

[TJW Additional prompt: Do you can the salmon and the tuna?]

“Salmon, smoked salmon, and smoked tuna.”

[TJW Additional prompt: Do you smoke it here?]

“Nope.”

[TJW Additional prompt: They smoke it there and can it?]

“That's correct. We don't have the smoking set up. And we're always looking for a good smoked salmon. But someday. Well, I'll do other things before I get into smoking. Other people know how to do that stuff.”

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

See below.

TJW: Is this a family business?

[omitted to protect anonymity]

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

“Our restaurant sales are about two thirds of our total sales and three years ago, they were about a third. And our customers are a mix of tourists, obviously in the summer, and fair number of locals too and then what I call semi-locals, I guess what I am, a lot of people have beach houses and stay for the weekend.”

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

NA. Coastal area.

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood retailer? What would you say is your top priority?

“Um, a couple things. I call it the vicious seasonality of this place. We have essentially a two month summer, two month and one week really from July 4th to, you could maybe call the summer ending the [local event], which is the week after Labor Day. So that's, you know, one thing. And so, what I want to do, now that the frenzy of the summer is over, is to devote more things online, trying to, right now we only ship our canned products online and it's very small. We've made some effort at improving our website. My wife's brother in law is our web guy. But I want to learn, I've got to plan things like, there's a lot of logistics around shipping perishables. I bought some crab cakes from Maryland just to see how they would they ship crab cakes from the other side. So, escaping, somehow using the fact that we have a lot of space that and extra capacity during the winter. So, I want to learn how to ship perishables and get a better website presence.”

TJW: Would you say that other seafood retailers have similar issues?

“Yah. The last restaurant... [Restaurant name] was the last restaurant besides us to close down the street and it was more upscale, so it wasn't really a competitor to us. But there were, at a peak, probably five restaurants along here and now there's just one. And the other thing I mentioned earlier, even in [Oregon town], I see seafood markets come and go, I just don't think a stand alone seafood market is viable, to be perfectly honest. You're basically in the grocery business and you can't compete the big grocers, and like you mentioned, the buyers that come in to bid for the crab.”

TJW: What are some of the other kinds of issues that seafood retailers in Washington are facing?

See above.

TJW: Have you been affected by shellfish bed closures or fish advisories? If so, how often?

“Um, once or twice in oysters over the last... but very few. Not to be biased, but I think we generally have fewer of those issues than the sound does. I assume that, I'm not an expert, I'm getting into your thing, but they always talk about the bay here such a pristine estuary and I think the Sound doesn't flush with the ocean as much. But we have had from time to time, oysters are oysters and we've had trouble getting them. We've had more trouble getting oysters for kindof competitive and logistical reasons than quality.”

[TJW Additional prompt: I've heard that distribution out in this area can be a problem]

“In fact, I'm glad you said that, maybe I should be anonymous, I can tell you more freely. I thought about getting into the oyster shucking business because there seems to be a stranglehold on the market locally. There's all these, you can't, I assume we can do it because somebody does, but the regulations are very onerous I've heard, which they should be because people eat them raw.”

[TJW Additional prompt: Is it more difficult to get oysters shucked than in the shell?]

“Not so much that it's more difficult, they're just extremely expensive and they come through, you can't get them direct. We have to get them through a distributor for reasons that I don't know. Sometimes I think it might border on restraint of trade. There seems to be kind of a monopoly on them.”

[TJW Additional prompt: Discusses other restaurant that took issue with the lack of distribution and variety of oysters available]

“Cause there's all the varieties, I would like to try more of the natives, the Olympias. What are they called, the kumomotos. People like to see that variety. I think that's, hopefully I wouldn't get squashed by the people who were trying to do that. It's ironic, we produce, what is it, a goodly percent, I've heard up to 25% of the country's oysters, come out of the bay there. And our restaurants and seafood markets can't get them. So, I see an opportunity there.”

“I'm trying to think if we've ever had crab problems, but no. Potentially, they could have, what is it the stuff that razor clams get?”

[TJW Additional prompt: The PSP? And when it came to the oyster closures, was that due to vibrio or something else?]

“I couldn't even remember, it was a couple years ago. On the razor clams, domoic acid has been...”

TJW: What would you say are your customers' main concerns and questions regarding your seafood?

“They want to know, is it fresh. And the answer almost always is yes.”

TJW: [Optional]: What are your views/experiences toward/with state regulation?

NA.

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“Um, no, except for what you just told me.”

TJW: If yes, how did you hear about this update?

NA.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

“The state's always out of money.”

“Not enough” [in reference to 'how much fish and shellfish people eat on a daily basis']

“So the higher number would help drive more strict pollution standards?”

“So, Inslee put forward this change to one in a million?”

“The issue is, probably 6.5 is more than average, but it's not, there's a fair percentage of the population doesn't eat that much. So, the average doesn't help them. It should be more reasonably based on what's an upper bound to the, you know, not the extreme, but... Obviously tribal members would be worse [off] because they eat more fish than average. Plus, their livelihoods depend on it more than average, so they're hit both ways.”

“I guess the million to a hundred thousand seems like a cop out, from the way you've described it. This kind of like fiddling with the numbers and not changing anything. People eat ten times as much fish, but they can get ten times as much cancer now. I'm an engineer, so I deal a lot in statistics and people don't grasp long odds very well. The difference in a hundred thousand and a million is... Almost anything bad... When you get to the one in a million rate, you can find almost anything bad happening to people. I think there is a significant difference, a hundred thousand is starting to be... that doesn't seem like a reasonable number, that doesn't seem like a reasonable number, that's my initial take on things. Because one in a million, just as an aside, I'm an advocate for bicycle riding and things like that, and children walking to school, so I fight this idea all the time that if parents, especially in middle class suburbia, if you let your child out of your sight for a second, somebody's going to jump out of the bushes and abduct them. It's like the missing kids on the milk carton thing, it created this idea in people's mind that abductions are rampant and when you really go through the statistics, they're kinda high numbers, but 99% are when one parent takes them because of a divorce dispute or it's like a 16 year old runaway. They're tragic, but it's not the classic stranger abduction in the street. The reason why I'm bringing this up is the actual odds of your child being abducted by a stranger is about one in a million. And so, in perspective, we're talking about saying we're going to pollute enough to say that your odds are ten times of your child dying of cancer than getting abducted, which doesn't seem like... You get down to what are the real things that hurt kids, they're really only three statistically significant things. Car crashes are way, maybe 10,000 children out of a hundred million kids, so I think that's one in 10,000, so that's getting, we all know someone. So, the one in 10,000 odds are starting to get...”

That's kind of a statistical discourse. But the point being that a hundred thousand and a million are significantly different, enough said."

TJW: Do you think that there is a need for higher water quality standards in Washington State?

See above.

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

"It's money. So, then you have to get into the details of which ones, which ones are the carcinogens. You can't, you know it seems cruel to talk about even one in a million because that means somebody is going to die, but you can't make it one in ten million or one in a hundred million. At some point, you have to do what's reasonable. People argue what's reasonable. It has to be set at a level that... What is the major carcinogenic compound as far as seafood specifically? Is there one that really sticks out?"

[TJW Additional prompt: Discusses the many different toxics and then PCBs, and making special rule for PCBs, arsenic. Also discusses draft rule]

"So, yah, now we're getting beyond the scope of our talk in terms of what is the cost benefit of the individual ones and who are... It's always they are polluting, but at some point it may come down to me paying more. [Local town] has the highest water bills, it seems like it. We have a water treatment facility down the road. My theory is that they're making the business community pay for it to try to get more high end roads built. At any rate, nothing comes for free. All these bills to pay. And regulation really hasn't, maybe I'll think differently when I try to get into the oyster business, it's pretty reasonable. We have health inspections, which we should have."

[TJW Additional prompt: So, you're pretty positive toward the current regulations, you don't feel like they're too onerous?]

"No, in general. My big complaint about Washington is the B&O tax. People in Oregon complain about paying income tax, I could move my business over to Astoria and my state taxes would go from thousands and thousands to... [small interruption]. But, if my business was in Oregon, I'd pay precisely \$150 a year because that's the minimum income tax because Oregon has an income tax instead of a B&O tax, so I would pay \$150 instead of several thousand of what I pay. Because I'm kind of a high sale, low margin kind of business."

[TJW Additional prompt: Is it worth economically for other reasons though to be here rather than in Oregon]

"We'll see, if [local town] gets it's act together. The ideal thing would be to expand to [larger local towns], we'll see. Because [local town] is so isolated, we're right where the product is and this really quaint fishing village, but it's hard for people to find. I will say one other thing that is kind of peripherally related is that albacore mercury thing, I think a lot of it was the press coverage of it gave, may have lost sales on that because of this

general concern about mercury. There were two things, people should be able to make up their own mind, I think, and how do you make an informed choice? Is it better to have a little bit, a trace amount of mercury in high quality type protein, wonderful food for your kids, than to have them eat a big mac instead? And the other thing is that they it didn't get enough press that the east pacific albacore that we catch off here are smaller fish and the seafood lab over in Astoria, Oregon State University has a lab in Astoria, they've done research and testing and the mercury levels in the tuna we caught, which is line caught over here, is a fraction of the mercury content of the big long-line. Because they catch the bigger, it's the just the way the life cycle of the albacore tuna is, that they catch bigger fish, they're older so they accumulate more mercury. So, I guess, one potential worry would be is, at some point, directly or indirectly, people in general or pregnant mothers or whatever are told to eat less fish because of all this stuff that's happening, which I think would be counterproductive because fish is really good for you."

SHELLFISH GROWER 1

Background

TJW: What kinds of shellfish do you grow and sell?

"Just geoduck."

TJW: Where do grow your shellfish?

"They're in south sound. Our biggest farm is [in Mason County]. Our second biggest farm is in Thurston [County]... Then we have some smaller ones, one in Pierce, a couple more in Thurston."

TJW: How long have you and/or your company been in the shellfish industry?

[omitted to protect anonymity]

TJW: How/why did you get into the shellfish industry?

[omitted to protect anonymity]

TJW: Would you say that this is a family business?

[omitted to protect anonymity]

TJW: [Prompt] How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

[omitted to protect anonymity]

TJW: How do you primarily sell your seafood?

"We give ours to a distributor that we are very tight with, they get all of [geoduck].

[TJW Additional prompt: Are you mainly a wholesaler or do you engage in retail? Is the retail online, retail store, farmer's market, restaurants...?]

“No retail.”

TJW: What or whom would you say is your biggest market?

“It’s China. 95 [percent] goes to China, 90 to 95% goes to China... OR the far east.”

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a shellfish grower?

“That’s one [China ban]. Keeping the animal alive for live market in the summer is another [across in Pacific].

TJW: What would you say is your top priority?

“It’s always, it’s like farming, getting the crop in the ground. Making sure you have adequate seed and good seed supply and government regulation is still a huge issue.

[TJW Additional prompt: In terms of getting beaches open?]

“It’s almost impossible. There are local, state, and federal issues.”

[TJW Additional prompt: Are you looking to get additional growing grounds open?]

“We didn’t try that at all from like 2005 or 6, we didn’t try to open new farms until this year because of the mess everything was in. We’ll see what happens.”

[TJW Additional prompt: The China mess?]

“No, no. With the government regulations. With them being... they’re just slow, slow-moving and dysfunctional is my opinion. I have a slight bias there.”

TJW: Would you say that other geoduck growers have similar issues?

“Definitely.”

TJW: What are some of the other kinds of issues shellfish growers in Washington are facing?

“They don’t have... Most companies are a little more diversified than we are. We sell one product to one country. I’ve always said that’s our greatest strength and greatest weakness.”

TJW: Have you been affected by growing area shellfish bed closures? [Additional prompt: Does DOH come in and close down a shellfish bed?]

“For anything, vibrio, PSP? We regularly monitor for PSP. I think we’ve had two closures in the last twelve years. Not for all of our beds, but we’ve had two closures within the areas we grow.”

[TJW Additional prompt: Any closures for vibrio?]

“Not sure if this is relevant. But we’ve moved to... vibrio is a thing that happens when they exposed to heat and sun and geoduck are down three feet in the sand. So the ISSC and whatnot they’ve excluded. So if they have a growing waters closure, they’ve excluded geoduck now. Our case was because they’re down where it’s fifty degrees and we take ‘em up and put them immediately in water so there’s never been a recorded case of vibrio with geoduck.”

[TJW Additional prompt: That’s good to know, I wasn’t sure if vibrio was only going to be relevant to shell in regards to oysters...]

“Well, they’re not even sure if it’s relevant to manila clams because you’ve had some, there are some dishes that you can serve with clams and oysters and mussels and they’ll have someone get ill, so now it’s affected all three species, but they’re not sure whether vibrio affects [clams] because they’re buried in the mud too.

“I have paid, not that I don’t pay any attention because I’m not on the board but I go to a lot of the board meetings, but I’ve paid less attention to the vibrio issue because it hasn’t affected us.”

[TJW Additional prompt: Anything with fecal coliform? I know that that is something else that is monitored at DOH. Has that never been an issue?]

“Um, I’m trying to think if there’s been any. It’s been close. There’s been some places that have been shut down because of leaky septic systems in the high numbers. We used to be in the manila clam business and that affected us more. Well, you know, geoduck is more out in the open waters than oysters, particularly oysters which are often at the heads of bays so you get less water circulation there and a leaky septic system there. While if it’s a septic system on the Nisqually reach, you have a massive current moving through there.”

[TJW Additional prompt: It’s a lot more flushing?]

“Yah.”

TJW: What would you say are your customers’ main concerns and questions regarding your shellfish? [Additional prompt: Would you have your distributor asking these questions?]

“We’re really tight with our distributor so I’m pretty familiar with issues that the customers might have.”

[TJW Additional prompt: What would you say their number one questions are?]

“Is the product weak at harvest because of temperature. They want it alive. You know, it’s a live market. That’s their main concern. They’re not concerned about the China Ban. They view it as political. I’m not sure I do, but...”

Chinese Ban of West Coast Shellfish

TJW: Have you been affected by the recent Chinese ban of west coast shellfish?

“Yes, very much so.” “I don’t think it would be relevant *[when prompted if he wanted to saying anything further]*. We are getting inorganic test results tend to show that ... inorganic arsenic bioaccumulates like metals do... they thought that would be true, but we’re not getting results showing that to be true. That’s where we’re getting our results from [DOH]. It looks like with geoduck that is 168 years [old], it might be an issue. “

[TJW Additional prompt: And I was also told that it was possibly due to different types of testing than we do here?]

“We don’t know that, we never were able to figure out what types of tests were done.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington’s Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“Not specifically.”

TJW: If yes, how did you hear about this update?

NA

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA

TJW: Do you agree?

NA

TJW: If no, then provides brief background and ask what is your perspective on this issue?

“Is that 6.5 of all fish? Even fishsticks? So there's 6.5 grams a day and they are saying it's 180 grams. This is coming back to me... you raise that number. They [the tribes] are saying 175 a day? It's fish quantity and then body weight...”

[TJW Additional prompt: Says cancer risk rate and continues to explain.]

“So, for future ones, when you do interviews, so I'm doing calculations, I'm doing the numbers, I might be unusual in that. [Does calculation out loud] 11.55 lbs a month.”

[TJW Additional prompt: Continues to explain.]

“What's the body weight?” *[TJW explains it is 80 kgs]* And the current one is 6.5 grams. So they all come in to play, so this one is going up by a factor of 30 and this one is only going up by 10% and that one is going down by [unintelligible]...”

“What does the federal government generally use for a cancer risk rate?”

[TJW Additional prompt: Says that they generally use one in a million, but there's been times where they've allowed 1 in a hundred thousand – this is part of the debate]

“Okay. Well, specifics or general, all of the above? I have a bias – my bias is how you define water quality. I think it's more than just heavy metals, which this is probably targeting. I think that the biggest threat to south sound is eutrophication. Eutrophication of marine waters *[provides TJW a pamphlet on eutrophication]*. You don't need to read it now, but I don't know if you're familiar with this, but right now nitrogen and phosphates are not considered a pollutant. But I would argue that they are and the reason why no one's going after it is because it's too big a problem. I think they go after the easy target, industry. Easy things to point at. Great visual image – a pipe. Or if you take a picture of someone's dog or their house or fertilizing their lawn or a nice field of corn or wheat, those don't garner as much outrage. The environmental community in particular tends to go after easy targets, I think.

I almost sued the federal government. I've sued the federal government already as a company. There is a nitrogen lawsuit in Florida that was put together by environmental group suing the Florida and the EPA and I think the federal EPA, they had to start regulating nitrogen as a pollutant. If you go look at Shell gas stations, we add nitrogen to our gas. Right now it's not considered a problem and that's what the problem is in the Hood Canal. It's what the problem is in [local] inlet. They don't have any limits to nitrogen. I'm a little more concerned with that than I am about this, I think. And that's actually the reverse argument for the shellfish grower's perspective is that nitrogen and pollution are good because that feeds the algae blooms, which causes our shellfish to grow faster. We're one of the fastest growing places in the world.”

TJW: [Additional prompt] That's a dual sword then, you want to be able to a little bit, but not too much?

“I think we had plenty when it was all natural. The other side of the coin is shellfish are seen as a mitigating source for marine eutrophication, because they consume the algae, which consumes the nitrogen and then we remove it from the water. So, the specifics of what they propose, I can see where 6.5 grams is probably an unreasonable thing. I don't think I've ever been, there's ever been anyone in my house who eats 11.55 pounds of fish in a month. So, you got to wonder, if you're writing the standards, you know, how small a group can you go? There's probably people, there's probably a person out there who eats a pound of fish a day. That's seem a little, slightly high to me. Body weight is... I don't have any problem doing that. I would rather let science rule, so I don't know what the question is in terms of outlier groups, I'd be surprised if there's, if you took an average, you might know the answer to this, if the average tribal person eats 11.5? Average?”

[TJW: Explains that this is based off of a few different tribal studies and 175 is the basement, there are tribes that range in the 200s. Four tribes that have done fish consumption studies].

“It kindof comes into play in the China ban study. So, if ONE person eats the skin off the geoduck. This is a double edge sword for even the tribal members. They are saying you

should set the standards for our tribal members. The Chinese are saying, you need to imagine you're a health officer in China, where they had a history..."

[Phone rings – small interruption]

"According to the Chinese health authority, they eat everything. I was in wong jones [sp] and I saw two fish tanks full of cockroaches for sale for food, so do you set your standards for those few people who eat the skin? You know? So, that's why I'm not sure I would go with that standard. Just because one small group of the general population... So, that's my bias. I have no answers, I'm just saying how it manifests itself. I want science to rule it. But you could go 30 pounds, I'm sure there's somebody out there eating 30 pounds, why not go 30 pounds?"

[TJW: Explains that one of the arguments is that there a need to protect vulnerable populations]

"I think anyone who's eating... You could make the same argument. Certainly someone eating the skin off of a geoduck, if they're that hungry that they got to use that skin. That's probably a poor family, they're vulnerable."

TJW: Do you think that there is a need for higher water quality standards in Washington State?

See above.

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

Didn't ask. See above.

SHELLFISH GROWER 2

Background

TJW: What kinds of shellfish do you grow and sell?

"Primarily oysters and clams, mostly pacific oysters, very few olympias, and mostly manilla clams but other species as well including the invasive savory clams."

[TJW Additional Prompt: So like the varnish?]

"Exactly."

[TJW Additional Prompt: Talked with other growers who were selling varnish as well, which I thought was interesting as I didn't know there was a market for it.]

"Yah, well, we've been developing a market."

TJW: Where do grow your shellfish?

“We do have a few other beaches [beyond the Hood Canal]. We have three leased sites and two are up north and one is in the South Sound and we work with two partner growers as well that are also in the South Sound. So, a few sites in the South Sound and a couple sites up North.”

TJW: How long have you and/or your company been in the shellfish industry? How/why did you get into the shellfish industry?

[omitted to protect anonymity]

TJW: Would you say that this is a family business?

[omitted to protect anonymity]

TJW: How do you primarily sell your seafood? [Prompt] Are you mainly a wholesaler or do you engage in retail? Is the retail online, retail store, farmer’s market, restaurants...?

“Our primary mode is wholesale, it's about 80% of our business at this point, but we'd hope to flipflop that and you know, within five years, but right now, it's primarily wholesale.”

[TJW Additional Prompt: So you're looking to do more in retail?]

“Yep.”

[TJW Additional Prompt: You also do farmer's markets, would you consider that part of retail?]

“Mhmm, yah. The retail we would consider the retail store, the [restaurant], the farmer's markets and our online store.”

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

“Geographically, yes, Washington.”

TJW: If in Washington, to which county or counties do you sell the majority of your shellfish?

“Probably King County. Direct to chef this year grew to be about 43% and of that, two-thirds of that is into Seattle and Portland, so when you take into account any distributor sales, I mean, we do sell a good deal of volume to say [distributor] in California, so you know, I'd have to say, but probably of most of [our sales] are going in to Washington and I would guess, King County.”

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a shellfish grower? What would you say is your top priority?

“What type of landscape, are you talking environmental or regulatory?”

[TJW Additional Prompt: Any. It could span a few different areas]

“I would say our main concern has been a shortage of product, which it looks like we're getting a really good set this summer, so that issue might be resolving itself, but that has been the major issue in the past three years. The amount of product we've had available has just dropped precipitously. So, that's been a major issue. So, because of lack of natural sets and also, just you, the way that we manage the farm. I think permitting has been a big issue, especially, it's hampered expansion to new areas like geoduck.”

[TJW Additional Prompt: Is the geoduck permitting pretty extreme, in terms of NMBY?]

“I guess it's mostly an eelgrass issue and we do have a lot of, a lot of acreage of eelgrass, and it's been increasing, so from our perspective, it's tough to say that the eelgrass is an endangered habitat because in our farm, it's just increasing, because of... If my understanding is right, one of our working theories is that before the river was channelized, it used to spray gravel everywhere, which on a periodic basis would keep the eelgrass down, and that doesn't happen anymore obviously because of the channelization of the river and so, the eelgrass is kind of, has free reign to expand. It does great and provides and provide awesome habitat for lots organisms, but for instance, some places that we would have planted geoduck, or that we did, have been inundated by eelgrass and then it's a protected or I don't know what exactly it's status is.”

[TJW Additional Prompt: Talks about focus on eelgrass right now in PSP. Would you be interested in not having the river so channelized or is...?]

“No, yah, first of all, that would be a major engineering project to take out of there, but also it's also a double edged sword, it's also what keeps our oyster beds from getting scoured also, it protects our product and it is the thing that has allowed the shellfish farm to grow and be productive. So, permitting, and then yah, the Army Corps has just gotten more and more onerous and they have regulations that don't necessarily make sense in terms of how to implement them. I mean ocean acidification is obviously a big concept that's really on people's minds, but we haven't been seeing the effects of it the last couple years, we haven't been having trouble getting seed. The hatcheries that we work with. But we're definitely in favor of research, funding research on it, but... [small interruption].”

“And then vibrio is an issue that is a major issue for us every summer. You probably know a lot about that.”

TJW: Would you say that other shellfish growers have similar issues? [Optional] What are some of the other kinds of issues shellfish growers in Washington are facing [vibrio?]

“PSP is one that affects others but not us like up in [North Hood Canal / Straits], there's some really huge PSP issues with geoduck. Obviously the arsenic thing, the China Ban, affected others, but not us.”

TJW: Have you been affected by growing area shellfish bed closures?

“I don't have a very long sample size to talk about, but this year, almost every growing area, everything shut down. It was strange this year the vibrio levels were way way way high.”

[TJW Additional Prompt: Because of high temperatures we've been having?]

“I don't know, I guess so. But they were like out of the park. It was kind of strange. But almost all the growing areas that we work in shut down, except for [beach in the Straits].”

TJW: What would you say are your customers' main concerns and questions regarding your shellfish?

“I, myself, don't interact with the customers that much. You know, there often are just general questions about, is it safe to eat, you know, and I think we often, we'll get misguided questions about red tide, which we can then educate that that doesn't affect us here. Certainly, you know, human health issues with the oysters. Back in the winter, we were getting a spade of questions about Fukushima and whether our oysters were radioactive [laughter]. That's the main ones that come to mind. Kind of important, not a concern, just a question is 'how do I cook this stuff?’”

Chinese Ban of West Coast Shellfish

TJW: Have you been affected by the recent Chinese ban of west coast shellfish?

“No. [See above] We are shipping some to Asia right now, [a manager] is in charge of that account so I'm not exactly sure where's it's going, but it's not going to China.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“No.”

- *If no, [then provide brief background {see below}] what is your perspective on this issue?*

“I have a few questions. One is about whether, you know they have a body weight component to the equation. Do they issue a separate guideline for children?”

[TJW Additional Prompt: No, it's a general body weight going from 70 kg to 80 kg. No separate issue for children.]

“Based on that then, children just shouldn't eat seafood, I mean according to their, you know, the way they're calculating, if they're saying it's safe for someone who weighs 160 pounds to eat 2 oysters a day, then, you know? It's not safe for any children to eat seafood is what I would draw from that. [baby cries] I know, you want to eat seafood, this sucks! [saying to baby]. And then, how do they measure the water quality, is it like a point source, right at the place of effluent?”

[TJW Additional Prompt: Actually at the end of the pipe, but they allow a mixing zone in Washington, they allow a certain level of mixing, they'll usually test right at the edge of the mixing zone and if it's been diluted].

“The mixing zone is internal to the plant that is emitting?”

[TJW Additional Prompt: No, it's external.]

“It's in the bay.”

[TJW Additional Prompt: Each state varies, but WA allows for a mixing zone. If there are two industries, then they would have to meet the same standard.]

“It would seem like there... Is there any shellfish that's allowed to be harvested from those mixing zones?”

[TJW Additional Prompt: It's generally not allowed. Discusses the sanitation survey, they'll look at the point sources, in addition to the upland, that could affect downstream. There is a lot testing that occurs for vibrio and nutrients, things that will make you immediately sick, quite a bit of testing on things that make you immediately sick. The toxics though, accumulative in nature, there's not as much testing. DOH employee said they will do heavy metals testing in the beginning to open a growing area that is urban. In general, not as much consistent testing for toxics.]

“Yah, I guess I would wonder about any, you know, when you talk about bioaccumulation, anything lower in the food chain that would originate in the mixing zone and then would be, if it was free swimming, then would be affected by those much higher concentrations and would be leaving mixing zones and would be eaten by other things. Yah, that mixing zone sounds like a really... shoddy solution. Well, I guess, I mean, my overall [opinion] is no amount of cost effectiveness is worth polluting our waters especially having the effects that we can test in certain ways but that we can never be able to... the ecosystems and human body are just so complex that I just don't believe that we can do all the tests we can assure ourselves that they are safe in any way.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Yah, it sounds like, from what you've described, there is, if the current water quality standards allow pollution to a degree to that only a half an oyster is safe to eat a day [laughs].”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Yah, I think that... of course, the economics of it are a reality. I think that where profitability of companies is a barrier, I don't think that's, ideally sacrifices would be made there as opposed to cutting actual jobs. Obviously people's livelihoods depend on the jobs, but on the other hand if you have really, like very uneven wage distribution within a company and you have a really high paid CEO who's not willing to sacrifice any

of that and that's the argument for saying it's not cost effective to meet certain standards yet, that's really [unintelligible]. But then, I don't know what state the technology is at. Are there the solutions that we need already and, but then there must be companies out there, you know, that don't really have the funds to put these systems in place without going under and that's where I think that public funding can help make it possible. But, of course, that needs to come from somewhere else. Public funding needs to come away from something else then, there's no easy answer, that's for sure. And I guess just from the science point of view, making sure that [it is] sound and trusting the right things and are comparing apples to apples across the board. I do think just in terms of protecting our ecosystem, aiming high is a good thing for water quality. I don't know, I mean we don't eat this much seafood every day, that's for sure. And there's a broad spectrum so do some people eat this much [gestures with hands] seafood every day, I don't know, maybe. I don't know if this is an average, but again, from just a human health standpoint, I don't see anything wrong with aiming high for water quality standards. But, if you're trying to get something to actually get passed... However, as you point out, changing the body weight and the cancer rates at the same time, if it reduces it back down, it's kind of like an empty change. I guess that's what I would say about the barriers. Yah, I don't know, I guess the other thing that comes to mind is anything inter-state, if you have different standards in different states, I don't know, it seems like it could cause some weird issues that I can't think through right now. I guess what comes to mind, if there is a lot... and I don't know to what extent... so we buy fish from [large fish distributor], I don't know if the stuff they buy and re-sell is from outside of Washington, who knows what the standards are there and that's what a lot of people are eating, are we really solving the problem for people living in Washington or not."

SHELLFISH GROWER 3

Background

TJW: What kinds of shellfish do you grow and sell?

"Pacific oysters and manila clams and varnish clams."

[TJW Additional prompt: Talked to others about this and they are now selling varnish clams, which surprised me as I thought of them as a nuisance clam with a little crab in it].

"I'm not familiar with the crab, but it's been that way, but they've grown in such population that we have a farm over in Hood Canal and maybe this year would be close to a hundred thousand pounds of varnish clams. They don't sell for near as much as the manilas, but it's a product you can market. We're not doing geoduck yet, but we plan to. We have several farms."

TJW: Where do grow your shellfish?

"Primarily here [Hood Canal]. We have a piece of property, down near, it's about a mile south [by local geographic point]. And then another farm on Hood Canal."

TJW: How long have you and/or your company been in the shellfish industry?

[omitted to protect anonymity]

TJW: Would you say that this is a family business?

[omitted to protect anonymity]

TJW: How/why did you or your family get into the shellfish industry?

[omitted to protect anonymity]

TJW: How do you primarily sell your seafood? [Prompt] Are you mainly a wholesaler or do you engage in retail? Is the retail online, retail store, farmer's market, restaurants...?

"It's all wholesale. And I've been a harvester up until Monday, I'm a shipper now. As of about the first of July, I acquired another grower's properties, so that's the other farms that are remote from here. We just had this farm alone and we would bring the crops into the dock and I bought a refrigerator, so we would refrigerate when we needed to, but other people, other shippers would come to us and we would just load their truck. So, at this point, we're shipping to others, as well as still supplying those other people at [shellfish distributor], [another shellfish distributor], half a dozen other people."

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

"Well, at this point, we're selling to [distributor] and [another large shellfish distributor] and they're both at least national. I don't know for sure, they're probably international as well."

[TJW Additional prompt: So, you're mainly selling to these larger distributors?]

"No, [first distributor] is a local guy that sells to farmer's markets and [different company] is another guy down in south sound that sells to primarily California. So, it's a variety of things. We like to keep multiple sizes of customers, it's important to have some people very consistent, they want the same 50 pounds of clams, twice a week, and you know, you have other people that say, if you have any excess, I'll take 500 bags of oysters or clams if you have it. So, we call those people up when we get an excess. We're still trying to figure out some of that, because I've grown from about ten employees to 30 this month."

[TJW Additional prompt: A big change.]

"A big change. I'm no longer retired. Last fall, I let the manager go because he wasn't performing, he wasn't accomplishing what I needed and I've increased production 76 percent and then acquired these other farms. So, I plan to double it again next year. But it's, you know, I knew the farm had the potential, it's just that it takes more work. So, I kind of stepped out of retirement."

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a shellfish grower? What would you say is your top priority?

“Regulations. And we need regulations, it's not a problem, and I worked for the state long enough I understand government and I tolerate it quite well. I have worked as a consultant, doing permitting for other growers, so I've worked through most of the permitting processes and I understand it, people hire me because I do tolerate it well, which they often don't. And government people don't tolerate irate people coming in and slamming their fist, that just doesn't work, but there are some of these things that are absurd and I mean that we have, federal, state, and local rules, it's just overwhelming. I don't know how you can start a new business, you know, a guy that wants to go buy a piece of property and start farming is gonna have to spend a \$100,000 on permitting and studies and other start-up costs, is just too much. So, for me, it's not totally the rules I have to deal with, but we don't want to do anything here that would damage our ability to farm a crop. And yet we have to, probably local government shoreline rules are the most difficult to work with because we have shoreline rules nazis at the county, every county isn't the same, I don't just mean the rules might be different, but it's the people, some individuals want to make it their goal but they don't understand what they're implementing. So, for example, one rule that they want, that they push, is that... I use scowls [sp?] and floats that I build them out of lumber, they're filled with styrofoam, the styrofoam is contained, it doesn't chip away and get away, but the county said well, maybe you should build so that light goes through them. I said, what for? They're not sitting on eelgrass, I have no eelgrass in this bay, and so what are you trying to protect or what are you trying to enhance by letting light go through it? Well, I don't know, but you should have light going through it. And I said, but they're not built it that way. Well, maybe you need to re-design it and have a pontoon's boat, that you could have with a deck between pontoon's that let light go through. And, it's like, that just doesn't make sense. So, it's like I have a dock that's it's planking, they believe it should be a grid that lets light go through. Well, it's like 12 feet above the tideland, light gets underneath it, it's a little bit of a shadow, but there's no vegetation anywhere near it, so why would that matter? They just say this is the standard, this is the rule. So, they don't understand, I mean it's like, okay, in that situation, you don't need to. So, it's go hire a biologist that is qualified to make those decisions and then report back, so I talk to a biologist, spend \$20 thousand dollars, do a report and it simply says this doesn't make sense, it's stupid, but here's your report. That is very frustrating.”

[TJW Additional prompt: Did they still want you to change or did they accept that as the opinion?]

“I haven't gone there yet. I met with them and they told me these things and if a biologist said it wouldn't have any effect, they would probably would allow it and leave it as it is. I changed my plans. I was planning on replacing my dock, but if I do that, I would totally re-design it. Instead I'll just do maintenance and not have to deal with them. So, I mean, it's headaches like that, okay maybe I'm better off not spending a hundred thousand on a new dock, I'll spend twenty thousand on repairs, and no money on biologists or the county. But, I'd rather have the new dock.”

[TJW Additional prompt: So, that's the number one issue then, permitting?]

“It's a huge one, and not to have duplication of permits. If I have to get a permit from, I mean we pass a standard with the Corps of Engineers and they're monitored by two other federal agencies that say okay, if you allow shellfish aquaculture in a given area, they do certain standard things with the farming, that we approve, there's no environmental risk there. Now, if they want to do, say, a section bridge, no, there's environmental risk, you're going to have to get a special permit for that. In fact, in Washington [unintelligible] in state law outlaw it. But, I mean that for an example, if you do standardized things, you're okay. But then you go to the county and they want you to go through a whole new set of hoops. It's like, well, if this agency says it's fine, then I should be able to show you my permit and you initial it. So, let's expedite these things and not try to regulate it at two or three different steps.”

[TJW Additional prompt: So, a one-stop shop?]

“They tried that.”

“Because of the shellfish initiative that Governor Gregoire approved, one of those things, was the expediting permitting, so they formed a group of different agency people and took some, I think, four or five different proposals and ran it through the process and I think they were all geoduck farms because they tended to be the biggest sticking points and they went through the process and they finished it. But there were never any recommendations made on how to eliminate steps or eliminate duplication.”

[TJW Additional prompt: So, they took it through the regular process rather than creating a new process?]

“Yah, so, it's like okay, this one takes priority. And the next one, no, not you, you weren't part of the special group.”

TJW: Would you say that other shellfish growers have similar issues?

“Yah.”

[TJW Additional prompt: Would you say that it's locked in right now then, you mentioned it would be very hard to start up, it would take a hundred thousand dollars to start a farm?]

“Yah, or you go buy another farm that's already existing.”

[TJW Additional prompt: So that's easier?]

“It's existing. Maybe there's a crop on it so you can live off that crop while you go through... these other leases that I'm picking up, I'm going to have to go through some more permitting on those. But I have resources to live off while I do that, so I can handle it. Now, if you were a start-up and that was your first farm and you needed money to plant a crop to get it going, it's a farm, so if it's a piece that might have natural stocks, but then, of course, if it's not protected by the shellfish settlement with the tribes, you got to do a co-management agreement, which might mean that okay, it further complicates it. I mean, we can't... the [local intertribal organization] is trying to come up with standards to

make it easier to work through the process, which I can appreciate. But, the biggest problem with the tribal implementation order is that it's difficult to follow, it was poorly written, both the settlement and the implementation order were poorly written, so there's too much to be interpreted by individuals and even though the lawyers say it's clear language, it's not clear language. But, the terrible big problem with that all is that the tribes don't have the resources to deal with as many new leases as growers want to start up with. So, it's like, no you can't do those leases until we get there to do a survey and do a process and we can't get through that, you're going to lose a whole year of production waiting for the process to go on. The tribes are gearing up for it, they're doing better. I know the [local tribe] started out, they only had one person managing the program and they weren't charging a fee to the people that were harvesting, like a tax, to help pay for more biologist to help process more permits and until they did that, it was kind of at a lock. And then something happened, I don't know the details, but the last time I met with them, they had two guys that were new and processing permits and moving forward, so I mean, it takes things like that to break it free and get moving.”

[TJW Additional prompt: Maybe someone new coming in...]

“Or a new process that Council finally approved a process that people could go with. Tribal governments are problematic and complicated, just like non-tribal governments. And they don't agree with each other, so there's disputes in the tribal disputes.”

[TJW Additional prompt: Or tribal turnover or new elections.]

“I've gotten to know most of them quite well. I've been working with the settlement for 25 or more years, well not the settlement, but the court case and then the settlement since 2007. Because I have retired at one point, we were trying to work through all these disputed parcels and we're thinking, I said, you know, guys, I was on a board that was helping work on this, and I said you know, how are we going to work through this without meeting with the tribes individually and talking about, okay, the paperwork I submitted you don't agree with, so what is it that I need to provide you to convince you that I'm a bonafide grower? And it's like somebody's got to have to organize this and have meetings, and okay the tribes agreed we'll have meetings, and I said great, what we need to be sure of is that we know which growers are going to do that and they said great, we'll communicate with you about that. I said, that's fine, it doesn't sound like a big deal. I found out I was organizing all the meetings, I wasn't just hearing about who was doing it, I was going to keep the log, so I set up meetings I think it was about 150 meetings, because I met with the growers first and then met with the tribes and then had follow-up meetings and it took a lot of time. And that was just one round and then we did another round and another round and we're still doing another round and not just with the tribes, we meet with individuals, but it's with the court. Much more expensive, spending money on lawyers. Each round is another couple hundred thousand. Anyway, I got to know many of the folks and I work with them fine, it's, you know, I don't have a problem. It's just the attorneys are who I don't care for very much.”

[TJW Additional prompt: So you have worked mainly with [local tribe]?]

“All of them. All of the south... all of the Puget Sound tribes. I mean, I worked as a consultant for a few people like [employee] down in south hood canal with the [local] tribe, but have also worked with a number of other people with the [intertribal consortium] and extensively with each of the tribes and all their lawyers. Probably the most with the [Puget Sound tribe], they had the most parcels to discuss, I got to know them quite well down there.”

TJW: Have you been affected by growing area shellfish bed closures?

- If so, how often?

See below.

TJW: What would you say are your customers' main concerns and questions regarding your shellfish? [Additional prompt: Other than do you have product?]

“That's always the big one. We closed down this past week because the hot weather, the vibrio level was climbing, it actually dropped back down again here, so we're moving product again, but we never did get shut down, I just didn't want to get anyone sick. So, that is a big concern, is environmental conditions and... vibrio is not something that we can control, but we can manage properly so that we don't get people sick. So, yah, our customers want to make sure that we're properly handling everything, that we have clean water, and that the product is of the highest quality possible. We hear about it very quickly if it's not.”

[TJW Additional prompt: If they don't like the taste?]

“Or if it's rejected by a restaurant that they sell to. They'll cancel orders because their orders were canceled. So, I've installed a lot of new equipment, a refrigerator, ice machines, just trying to do whatever is required, well should be required. I've been involved in Department of Health's, they call it VPAC, but it's a vibrio rule-making committee and just constantly trying to improve what's done. I know [NWIFC employee] is on the committee and a number of other folks from all over the industry.”

[TJW Additional prompt: Discusses how DOH is experiencing a risk-based vibrio program]

“I hadn't heard about that. Is it a study? I know there were several studies going on. And I know one of them was doing a, I think it's someone at the UW that's working on a serving size study, so I mean there all sorts of things with this. Because you can't determine risk without knowing what a serving size is. As simple as that is, is how many oysters does a person eat when they eat oysters? Is it one or six? They said it ought to be one because only one oyster, you eat one oyster that makes you sick and it only took one. But the FDA said it was 13, a baker's dozen. It's like, well, a lot of people go eat a half dozen, so we're doing a study, they're doing one on the east coast as well. We're sharing notes. So, I'm not surprised there's a risk study going on, and maybe it is the one I've heard of, I was thinking it was the Department of Health, but maybe there's more than one.”

[TJW Additional prompt: Discusses working at seafood store and vibrio shutdowns]

“[Another harvester] actually stops harvesting when the water temperature hits 65 degrees now. That's one of the things in the risk-based approach, it's depending on the risk level, however they determine what the risk is in a given area, that then you set environmental parameters that get more strict the higher the risk. So, if you have very low risk, you can harvest oysters up to 70 degree water temperature, or if it's higher risk, then maybe it's 63 degrees you want to stop. The problem is, how do you consistently measure water temperature and where do you measure it, they are a lot of factors involved and for me, right here, a mile down the bay is a NOAA buoy, part of NANOOS and I go look at the water temperature there and it can be 10 degrees different than the one we take in here because our tideflats warm up and the water floods in and you can take it at high tide, but what concerns me is DOH will come out here and they'll do a sample at the bar, which they'll take tomorrow, they have a sampling site, and they may run out to the edge of the water and take water temperature that has nothing to do with the water as it floods in over the oysters. And we do the long lining, so we go out at high tide and then pull after it's been under water for four or five hours. So, what we should do is take a temperature roughly at where the oysters have been residing for the last few hours. I haven't gotten there yet, I have a temperature probe, we're trying to get it hooked up. It's a wireless thing that will tell us all the time what the temperature is, we'll put it out here in a pool of water so that it doesn't react to air temperature so much. So, we'll be recording here water temperature and then tracking how it compares to maybe to the temperature probe we've put in with the oysters. But there's a lot of things you can do, but then, okay that may be here, but what do I do at [here] or what do I do at our Hood Canal property. So, people have debated that and we're not really sure yet.”

[TJW Additional prompt: So, not sure right way to assess risk?]

“Or how to apply these risk-based environmental approaches. So, we have another meeting next week, we'll debate that further.”

Chinese Ban of West Coast Shellfish

TJW: Have you been affected by the recent Chinese ban of west coast shellfish?

“I wasn't. Well, I was affected just because being [associated with a company] so I was following it for that reason, but business-wise, it didn't have any effect on us.”

[TJW Additional prompt: Because your distributors were mainly national?]

“We weren't selling geoduck. It really only affected geoduck. It affected all bivalve shellfish, but we weren't necessarily, we have enough other markets, if some of our markets were selling to China, there's so much other market availability that it didn't really affect [us].”

[TJW Additional prompt: Discusses other growers that were very affected and ended up selling to other areas of Asia]

“Many went to Vietnam and Taiwan and Hong Kong.”

[TJW Additional prompt: Hopefully that's all cleared up].

“Much of it. There's still probably wild ducks that they can't harvest.”

[TJW Additional prompt: In terms of new testing rules in place?]

“There's a lot of wild ducks that won't pass. The levels go up as they grow older. And this stupid thing about the Chinese eat the skin and the skin concentrations pretty high. Most or all would pass if you eliminate the skin and the gut. They say they eat 100% of it, it's hard to believe that they eat the skin.”

[TJW Additional prompt: I'm told that they grind it up. They dry it and they grind it up and put it in soups as thickener, that's what I was told.]

“Oh, okay, they shouldn't do that, there's arsenic in there.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

Yes [see below, he started talking about this in very beginning of the interview, without prompting with this question].

“We didn't propose that we dumb down these rules or do anything like that. We simply, early on, we hired a specialist, a scientist, to study the early proposals that were under Chris Gregoire and some of that was interpreted as though we felt that this was going to be something we didn't support. And the tribes, I know, are more in favor of making it, pushing it to the higher level of control and yet, the growers don't necessarily feel that it should be pushed to the lower end of control. Clean water is what we live with, we got to have it. But we also have to live with a healthy economy and our customers need to be able to buy shellfish and so we don't a deal killer and my biggest concern with Chris Gregoire when that happened, is that she had a meeting with Boeing and basically they said, kill it or we're going to move out of the state and so it gets to the political end of it that bothers me extremely. I don't want to be making a decision based on politics. But I know that Inslee's going to have problems, it's hit the fan now. I would imagine Boeing has forwarded some threats of sorts and, you know, the big concern related to the tribes and the whole delegates table was that they didn't come to the table. And they said well, we want to negotiate based upon government to government and they met with the EPA and did it totally as a separate thing. You know the value in this was to get them at the table with all the other people. It's like I was sitting there alone as, call it an environmentalist, as a grower wanting to support the, I'm not a discharger. Everybody else at the table was a discharger. There was one lady from northeast Oregon from, I forget the tribal group.

[TJW Additional Prompt: Was it Umatilla?]

“I think so. And she was at the table, and it was like great, we're happy. You're driving so far and you're here, but she had experience with what they did in Oregon, so it was helpful to get a bit of that perspective. There was a group of local tribes that were invited, but just didn't come and that was disappointing, we wanted their perspective.”

[TJW Additional Prompt: Talks about disappointment from tribes re: first technical document being rescinded contracted to look at what would be acceptable for tribes. Policy decision and not a science one. Must have felt very isolating if only one at the table]

“Yah, but I don't recall that anyone at the table was proposing to hold back, we didn't have Boeing at the table, but we did have Weyerhaeuser there and many of the municipalities, county representatives and other people. Their perspective was that we need some stronger controls, not necessarily, I don't think anybody said we need this number until we went through each, I mean there are so many elements to the water quality controls that we discussed every aspect of it. And we kindof, we didn't come to consensus on anything, but we came to same, we offered advice to Ecology to say, in this area, we probably should be looking at these numbers.”

[TJW Additional Prompt: So many factors. So, there wasn't a main concentration on the fish consumption rate, but on other factors as well?]

“It's the easy for one people to debate because, for one, we did use the tribal studies, they were valuable, they were put to very good use. It's not like, okay, Gregoire put it off the table and we scrapped all that work, it was used. We looked at a lot of other studies that were from different parts of the country as well. That said, okay, we know that these numbers are wrong. The numbers we currently use. It's totally out of wack. But it's then it's like, where do we settle? And then, you could move any one of these elements up and down and end up with a different result, so that's where it got pretty complicated. And we were told that they would, Ecology would prepare some, propose rules. And then we'd have a meeting to talk about that in March, I think, maybe February. And we were told, okay, we need a little more time and then haven't heard a word since then.”

[TJW Additional Prompt: So then press conference happened?]

“I think the governor, we've known all along since last fall that the governor put together a different committee and they were working on educating the governor about all of this and working parallel to the delegates table. We'd get reports back and what they were talking about, what their thoughts were, and yet what I believe has happened is that the governor has basically said, I don't care what the delegates table is doing, I'm going to make this executive order, this is where I want it to go. And, to me, it feels like our feet got kicked out from under us as we never even saw any proposed rules yet.”

[TJW Additional Prompt: And you said they were going to come back to you at the end of March and give you a variety of rule?]

“No, they weren't going to give us a variety. In the last meeting we had, it was a little bit disappointing when they were talking about, well this is where we think we've landed and now we'll put this together in rule language. And, it's like, you've landed on this, but you haven't even asked for us to make a policy decision or where's our recommendation? You're just saying, this is where Ecology has landed, based upon the input we've provided to date.”

[TJW Additional prompt: But no vetting of the process, just we've listened to you, but we've made this decision.]

“Well and then they said, we'll talk about it when we get these proposed rules out here, so if we say fish consumption rate is at 175 grams and one in a million hazard rate and you set those out in the rules, then it would give us something to bite on and we could chew away on it. And that's where we felt, okay, now we'll talk about what is the end result of this. Because none of it means much until you know that, does that mean that you'll try to control some discharge at a level isn't even detectable yet? And that's the big concern, probably the biggest push back against the rules is that it's not reasonable to set rules if we don't even have any concept of how we can achieve it. So, if you can't discharge, say mercury, at, I'm not a scientist to know the number, but you can't discharge one mg per billions gallons and yet you can't even detect it at 10 mg per billion gallons, then okay, if you're setting the standard below the detection level, how can you achieve that?”

[TJW Additional Prompt: So, that was a conversation that came up a lot?]

“Oh, it was. And it wasn't just the detection level, the technology to remove it. We said, okay, we can understand if you set a level that we can't achieve today, but we think now because you've set that level, people will studies to figure out how to reach that level, that might be okay. But if it's not even detectable.”

[TJW Additional Prompt: And that seems to be two very different issues... Which chemicals were they talking about, was it a large majority of them, or just the few that might be at the level?]

“Of course, we've removed several of them off the table, like arsenic and mercury. But I think maybe the biggies were, I don't remember the technical term, the dioxin type chemicals, and those that are fire retardant chemicals, those were pretty big concerns these days, and yet we're not sure if... There's even debate about the method for detection. And there's apparently a new proposed method of detection that we talked about at length, but it kinda went over my head. There said there's a standard maybe, it's a

standard EPA has chosen and there's a new standard out there that will help you detect more levels, but it's yet to be accepted.”

[TJW Additional Prompt: Talked about different variables. Was there a lot of back and forth about the cancer risk rate and fish consumption rate?]

“We might have put in a day of meetings for each of those aspects, maybe more than that, plus, well, the whole process began, they said, we're going to have a public education meeting and then the delegates table. The first delegates table we had some of the people that were more knowledgeable about this said, you know, you're going to waste our time if you make us sit through all this education stuff and then back and forth, so why don't you educate people first and then call us back to the table. And I sat through all those educational parts that were, I think, 10 or 11 or 12 meetings or something, and so then we got back together and then we almost rehashed everything they talked about in everyone of those meetings with the delegates. They did it much quicker. Okay, you guys know more about it and I had become more educated because I knew nothing to begin with. So, I was able to keep up. Had they not done it that way, I think I would have just been overwhelmed, totally. And as it was, I was overwhelmed, totally. So, in the end result, everything was hashed and re-hashed. The cancer rate, I don't recall that was one of those things that we discussed at length, but then in the last meeting, Ecology says well, we think we're going to go with one in a hundred thousand. And it's like, okay, where did that come from? We're not going to talk further about it? And it's like, well, what we want to do is lay out these rules and we can talk about scenarios. Well, I wish we would have had more scenarios earlier to say, if you choose this and this and this, the end result is here and oh, we don't like that because you can't achieve it so how about manipulates something else to see if it can be more achievable. I think Ecology did that on their own and said, well, if we're going to accept this fish consumption rate at a high level, then the cancer rate, let's bump it down to one in a hundred thousand and then the end result is still at a level that is much higher control than we currently have.”

[TJW Additional Prompt: For some. I know 70%. People are still doing calculations, but in breaking it down between the four categories – 70% will be more protective, but 30% in the freshwater carcinogens would have increased. What the draft rule will have, is that they will keep it the same. The word he used was no backsliding. It would have allowed more toxics in the water, then keeping it at 6.5 at the 10 to the minus 6. Everyone wants to see the rule itself.... Is the delegates table over?]

“No, I got an email from one of the folks there, wasn't sure if it was the person contracted to coordinate it or one of the Ecology people, saying you guys have probably been wondering what's going on and have seen the news and all that stuff and then they scheduled this meeting just yesterday, I was booked for it. I ended up spending too much time in town on other things. So, it was basically saying, okay, we're getting back to

business on this and here's this discussion basically talking about what the effects are with what Inslee's decided. And I think then, the next thing, once they get some rules put together, they'll get back together to do some more. It's just not moving at the schedule they originally proposed and the governor probably told them, I'm just assuming, that I need to make a decision and I don't want you guys moving ahead with rules until I've made a decision. Or you'll waste your time. So, that makes sense, you don't want to build rules if you're waiting for the governor to make a decision about something.”

[TJW Additional prompt: There's supposed to be a draft rule by end of September. Do you think you will be gathered back together before that?]

“I would assume that, but I haven't heard that.”

TJW: How did you first hear about this update?

“Well, Gregoire was still in office. It was roughly this time of year. It was three years ago, possibly, where there was something about fish consumption rate coming out and we were, the [group] was asked, to asked to provide some feedback. So, at that point we met with Ecology, we were there, I think we brought [an attorney] that we've had follow this. And we were all a bit overwhelmed. They talked about it and we brought along a person we hired from, and I don't remember the scientific firm name, and we brought her in and she prepared a response. And then we met with them again to talk about our response and then at that point was when the tribes didn't like our response. I think there was a discussion that [group member] had with the Washington business association.”

[TJW Additional Prompt: AWB?]

“AWB. And some things were spoken about there that were perceived that we were backing out or that we didn't want standards that were strict or something, so we lost connection with the tribes at that point. But that's where we I first got involved and then there was some mention of the delegates table to work on the rule. And I volunteered for that. I mean, with these various issues with the [group], they're always looking for someone to represent the [group]. I was [a board member], but I also retired from the state, I worked there for 30 years at DNR and then I was involved with it remotely. We had a full-time manager here, so I was just kindof working with that manager, I live in [South Sound]. And I do consulting work as well. I said, well I have a little bit of time, I can work with that. So, I stepped into that role. So, that's kinda when I first got involved in that.”

[TJW: Do you think that there is a need for higher water quality standards in Washington State? And since you're so versed in this issue, do you see a solution here or standards you'd like to see]

“Well, I do think we need better standards than we currently have. And a solution in terms of getting better standards?”

[TJW Additional Prompt: Standards, in terms of the draft rule, is that something that you would be supportive of, do you think more or less?]

“Well, I haven't seen the draft rule to know that.”

[TJW Additional Prompt: And that's the 175 to 10 the minus 5, but they haven't come out with what the variances are going to be.]

“So, I guess I have mixed feelings about it. The biggest concern from the very beginning that [group] had, we met with Ecology early on, the biggest strongest message we had wasn't so much about what we think the standard should be, it's that's when you set the standard, we don't want to have you turn around and declare a lot of our shellfish grounds as being toxic and advertise that to the public that we're, you know... that's you've been eating toxic shellfish for all these years and now we're no longer gonna be able to sell them. And it's like, no, this is the cleanest water in the country, we're simply going to ensure that it stays clean with new standards that are higher. So, the problem is that the press comes into a meeting and what they hear and then interpret and publish, we don't get to see in many cases. And so, I guess the key thing there is that people would consult with us, but they often don't, they just...”

[TJW Additional prompt: Just write what they want to write and then start talking about a cancer risk rate.]

“And that may be misinterpreted. And it's like, oh my God, there are shellfish that have been out here that are going to cause us to get cancer or something. So, we've been wanting to make sure that we're very careful about messages that are put out. I honestly feel like it's kind of out of our control, even though Ecology might be willing to work with us, the press comes in and do whatever they choose. So, I mean, we can't tell the press, don't write those words. We may try, but they can tell us that they don't care, if that's what they believe. How do we get a stricter standard and keep our customers? And that's a big challenge. We don't want people on the east coast to perceive we're in polluted waters, so we don't want a message to go out to the world, I mean, for example, and you're probably aware of the China ban on shellfish, and so we don't want that kind of thing to happen, it's very easy for another country to say, well we think you need new protocols now on testing because you now have to follow your new standards and you have to ensure that the products meet those new standards and maybe those standards were written for discharge, they weren't written for food health, per say. We do look at fish tissue and whether it's got contaminants or not. But if new standards come out, it doesn't directly apply to the fish tissue levels. It's a discharge control. You hope that the fish tissue toxics go down when you have less discharge, that's the intent, and yet...”

[TJW Additional prompt: And you think there might be additional tissue sampling with the new standards?]

“Right, which the Chinese have done. They requested that new protocols be put in place that weren't in place before.”

[TJW Additional prompt: Talked with co-worker about this, pushback on some of the protocols not doing continual toxic tests unless new polluter comes in.]

“But arsenic is a different story. You're not going to see wild fluctuations in arsenic because it's natural, in fact, the levels are higher in the ocean than they are in Puget Sound. You get freshwater flushing in Puget Sound and it reduces the arsenic levels. So, I think there's a big challenge ahead of us where we don't end up in situation where it's perceived that we are trying to sell a product from these waters that we're trying to keep clean, but it's not clean. Or that we're that we're required to put protocols to put in place that are very expensive to implement. As well as I don't want to see our economy crushed because we've done something that the dischargers can't work with. I mean, it's more than just a Boeing, it's the public, and can the public [have the millions of] dollars it's going to take to remove some of the toxics that are in that, I mean they keep coming up with new chemicals that they put in our clothing and our bedding and our houses and then that ends up in the water eventually. So, I mean I'd love to see some direction to say manufacturers when you create things, don't create things that are going to cause problems in the environment. But we probably live with things in our own homes that are quite toxic to us. I mean, particle board has toxics in it. You know, things burn in a fire and they get released in the air and we breathe it. And so, there are things... we need to cut it off at the source, but we need to do it gradually enough so that the people, the manufacturers don't go bankrupt and work on it as it can be done.”

[TJW Additional prompt: Talks about Inslee talking about newspaper plant and toxic ink from China, discharge wouldn't be able to get down to new standard, looking at the origin of the ink].

“That makes complete sense. Don't try to remove it after you put in there. And you may need to use different materials. If it's a cleaning agent that you're using, change to something that's less harmful in the end. But can remove, or doesn't need to be removed. But I think there's probably a lot more sensible approaches to it, but I don't like an approach if it's this is the new standard and you don't have enough time to adapt. That somebody says I can't afford to work here anymore because my neighbor in Idaho doesn't have to do this, the new standards too. So, they may say well I'll go to South Dakota and move my manufacturing plant there because they don't have to control it and they don't have to deal with Puget Sound. They can dump it into the Missouri River and it'll go to the Gulf of Mexico and stay there.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“One of the biggest barriers might be politics. Like what happened with Chris Gregoire. It'll be interesting to see what happens this time around. I like to make scientific decisions and not have it be placed on politics. So, if it makes good scientific sense, that's great. I don't want somebody to make a decision to say, well I won't get elected if I make this decision. Another big barrier is what's naturally there or what's coming from other countries. So, if it kind of like, the CO2 discharge, I'm a little concerned about the governor's proposal there because if we eliminated all CO2 discharge in Washington, it will have no effect on the world's CO2 discharge level, so unless we can do something as

a country all together or as international efforts, we don't gain anything, but it can cause significant problems at home. That's a big thing. Now, a lot of these discharge limits directly affect Puget Sound. But there are those things like arsenic and there may be other chemicals as well that might be coming from Canada that they don't have as good of control, or from China from airborne deposition, or natural. If it's natural, we can't control it below that level of what's naturally there. So, for arsenic, I think that makes sense to say, well, we don't want to discharge anymore, but we won't worry about controlling it below a certain level in the waters, so if it's in fish tissue..."

[TJW Additional prompt: Not to prohibit selling it?]

"Right. But don't contribute more to it."

SHELLFISH GROWER 4

Background

TJW: What kinds of shellfish do you grow and sell?

"Mussels."

TJW: Where do grow your shellfish?

"We have five acre lease from the State of Washington [in Mason and Thurston County in South Sound].

TJW: How long have you and/or your company been in the shellfish industry?

[omitted to protect anonymity]

TJW: How/why did you get into the shellfish industry?

[omitted to protect anonymity]

TJW: Would you say that this is a family business?

[omitted to protect anonymity]

TJW: [Prompt] How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

[omitted to protect anonymity]

TJW: How do you primarily sell your seafood? [Prompt] Are you mainly a wholesaler or do you engage in retail? Is the retail online, retail store, farmer's market, restaurants...?

"Um, wholesale mostly. We do restaurants too. And we sell to people who market at the farmer's market, but we don't market ourselves there. [A company] at the market down here [Farmer's Market] sells them and he has exclusive rights. We have sold up them up in Seattle and places and Oregon."

[TJW Additional prompt: Most of your restaurants are in Seattle?]

“Um, yah. We have some in Olympia and, you know, depending, mostly that way [Seattle], we tried Portland for a while, but way to much work to get it to Portland.”

TJW: What or whom would you say is your biggest market?

“Western Washington.”

[TJW Additional prompt: Maybe Thurston and King County, those are the big ones?]

“Oh yah... unlike [large shellfish company]. Are you interviewing [them]?”

[TJW Additional prompt: Explains that I'm trying and can tell them more about that. I have someone who has agreed, but unsure if he will follow through on interview at this point.]

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a shellfish grower?

“Water quality because it makes a difference to whether things grow or not. Things die otherwise.”

[TJW Additional prompt: Has that been an issue year to year?]

“Yah, because of different reasons because of different parts of the water quality, different kinds of things growing, the amount of food, you know the makeup of plankton. And then being able to sell it cause the water is clean enough. And then the other piece is to get enough small larvae or small tiny mussels to grow.

[TJW Additional prompt: So, seed supply is huge. This has been a huge issue with oyster farmers that I've interviewed. So seed source is an issue for you?]

“Mmmhmm. Because of the water quality, the acidification, etc, etc. etc. All those things are changing enough that hatcheries can't totally be on top of it.”

[TJW Additional prompt: So you've found that your seed supply maybe has diminished because of ocean acidification?]

“Possibly, part of it was. Some years, other years it's other things. Who knows. But, it's all those little finesses you have to do when you're doing a hatchery. It's tough.”

TJW: What would you say is your top priority?

See above.

TJW: Would you say that other mussel farmers have similar issues?

“Probably, I don't know. [Large mussel company], um, I think they have, they are working with [large seafood distributor] now to get mussels. Of course, [large shellfish distributor], as mussel growers, has their own little hatchery, well it's not so little. We mostly buy from them, for seed, they're friendly. We have a good working relationship.”

TJW: [Optional] What are some of the other kinds of issues shellfish growers in Washington are facing?

“I would say similar [to ours].”

TJW: Have you been affected by growing area shellfish bed closures? [Additional prompt] I wasn't sure if mussels are at the same risk for vibrio?]

“It doesn't matter. Everyone closes due to the water when it rains too hard. And [our area in the South Sound] used to not close, but now it does.”

[TJW Additional prompt: So, it's more in terms of fecal and runoff, rather than vibrio? I wasn't sure if mussels were at the same risk as oysters for vibrio?]

“Oh sure. Well well okay, not for the little babies, no, I guess not. But we are at risk for paralytic shellfish, for those messy little diatoms [sp?] that are appearing more, all that kind of stuff.

TJW: If so, how often?

“For rain, at least once a season, or you know, a year, at least. Two or three times, it's not extremely awful, but it's bad enough.”

[TJW Additional prompt: Is that for fecal then?]

“Yah.”

[TJW Additional prompt: And in terms of biotoxins, is that sporadic?]

“Yah. Unfortunately, down where we are, it's the diatoms that got to us and did nasty things and PSP we have sent in, we are part of the testing program for that, and we don't, it doesn't go that far south generally. We've been lucky. Sort of north of the bridge [is where they have PSP issues].”

[TJW Additional prompt: Talks about Jamestown S'Klallam and the PSP work they are doing north of the bridge.]

“I spent a summer at the [unintelligible] and they were looking into some of that.

[TJW Additional prompt: But the closures due to rain, it's once a season?]

“Yah, well, once a season, in the winter, with the large rains. And I don't really know how many times it closes in the winter, it doesn't seem like more than once.”

TJW: What would you say are your customers' main concerns and questions regarding your shellfish?

“I think they want them fresh.

[TJW Additional prompt: That's the main issue or question?]

“Well and obviously safe. But because of the Department of Health, I think it's sort of a given that you're going to have a healthy mussel, right? But it's got to taste good, right? It's got to look good. It's got to have shelf life, the typical shellfish thing. And of course, the size. You can't have them too big, you can't have them too small.”

Chinese Ban of West Coast Shellfish

TJW: Have you been affected by the recent Chinese ban of west coast shellfish?

“No.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“No, I don't. Tell me.”

TJW: If yes, how did you hear about this update?

NA

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA

TJW: Do you agree?

NA

TJW: If no, then provides brief background and ask what is your perspective on this issue?

“That's the part that I'm aware of [the drinking water] and testing for fecal coliform.”

“And how do they measure it, do they measure it in the water and do they measure it in these [shellfish]? They are looking at how much the tribe harvests and then sells?”

[TJW Additional prompt: No, an equation on how much the tribe or others eat on a daily basis to set a protective level.]

“I could see how that wouldn't be fair because a lot of people that don't come close to eating that much.”

“Well they certainly collect shellfish data from the State of Washington from all shellfish grower's and we have to send in our monthly, quarterly reports by the month, oh my God, I don't think they ever compile it. So, and then, certainly, it would be interesting to take a little sample of retail places and stand out there and see how many people buy it.”

[TJW Additional prompt: So in terms of an average of how much people are eating on a daily basis?] ”

“We could do some estimates and you could have a range, I would think.”

[TJW Additional prompt: Explains that was one of the suggestions, some people have argued not looking at tribal data, but in wanting to look at an average of other Washingtonians.]

“You could even do state-wide data, even just western Washington, because that would still be fairly high.”

[TJW Additional prompt: A lot of people eat a lot of fish and shellfish, but some don't, some have put it in the terms of 'how clean does the water need to be?']

“Yah yah, and oh yah, not only that, but what are you testing for?”

[TJW Additional prompt: Explains that there are 96 different toxics that are being tested for. Some will have their own special rule, such as arsenic, mercury, and PCBs. Also explains variances.]

“Who are the people that dump in these 96?”

[TJW Additional prompt: Explains that a lot the people who have been really active in this debate are Boeing and Weyerhouser and AWB. Explains large industries that require the NPDES permits, the issues between Boeing and Gregoire, the first and second technical documents, and subsequent roundtable discussions.]

“So, the other question I would have is, what is the technology at this point? Could it they clean to that point?”

[TJW Additional prompt: Could they clean it to?]

“Is it possible to do that?”

[TJW Additional prompt: States that that has been a debate in terms of certain toxics, in terms of the policy roundtable, one of the questions was, for certain toxics, could we get it clean to that level. And that's where some of the variances are coming in.]

“Right, because... I think you have to... It's like no child left behind, everyone will be above average. And, you know, that would be nice. But if you can't get there, then you have to be aware you're going to have to deal with it at some point, so maybe you figure out a better... you use anything that gets something like that. But, but you got to be able to have some attainable goals here or you'll have people just really angry and they'll be blocking and you won't get any better at all.”

[TJW Additional prompt: So you think a compromise is needed to get anything through?]

“Well, I think the idea of... well, these, we can definitely get it here and we should. Here, this is maybe going to take us a little bit longer to get there, but we need to get there. That kind of thing where we think about it so we can make it so it can be done. Cause I'm really tired of people like the legislators just saying, 'you do it.' Oh, get real.”

[TJW Additional prompt: So, a pathway forward?]

“Yah.”

[TJW Additional prompt: Explains that this is where the variances are supposed to come into play, industries worried about this, having a standard in place and not being able to meet it.]

“Or spending millions and millions and millions to get there. Um, because you're doing it too quick or whatever. But you somehow... how do figure out how to not have it out there? Either filter it out or don't use it. Whatever the process has to be to make it.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Okay, so how many people have gotten cancer from shellfish?”

[TJW Additional prompt: Doesn't believe there's been a study that directly studies or correlates cancer to shellfish or fish.]

“I don't think you could say. And so, I think it's all very theoretical. I like the idea that we're protecting ourselves because we've done a lot of really dumb things and you don't know, in fact, well, my latest little thing that I've been teaching in school, I'm doing more and discussing is epigenetics and toxics and how it changes what genes get turned on and turned off, we have no clue about that, but we're seeing more and more that that happens. So why would we want to continue throwing things into the water when we can see at some level obviously are doing things and at other levels, we have no clue, but they're probably doing things. So, yah. Clean is good.”

[TJW Additional prompt: So, on one hand, hard to make the connection as you think it's theoretical, but on the other hand, toxics are toxics and we know they are bad for us. So, somewhere both or?]

“Yah, I think you got to have some attainable goals and make it working for clean water.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Well, those guys that have to clean it up. They have to pay for it. Somebody's got to pay for it. And maybe we end up... I think a lot of it does happen is that Universities are given grants to do research and whatever whatever, but you know, you create some ways that other people get jobs from having to figure out how to clean it up.”

[TJW Additional prompt: So, an economy boom on its own from environmentalism?]

“Yah.”

TJW: [Additional prompt] Now that all questions have been asked, TJW further discusses her viewpoint, including variances, etc., industries not externalizing costs to the public, and how she is being more careful about specific areas from where buying fish and

shellfish, and the need to proactively protect high water quality areas so that new businesses will need to meet higher water quality standards.]

“See, what I have a problem with is [the number]. They have no clue and they don't know whether it's cancer caused by these things are not. They have none. And you're also getting all of these other nasty 96 from other places. And so, this is to me, right here, is oh that's nice to put it in the equation and say oh well, here's this long term thing way out here, it's a way to measure future's illness, right? It's a nice way to say it. Someday they'll say epigenetic and some other ways of doing it, they won't measure that.”

[TJW Additional prompt: So you think it's arbitrary?]

“It's extremely arbitrary. And I think, to me, this [points to FCR in equation] is the least arbitrary in some ways because this is how much I can eat and still be safe. It's like tuna fish, you don't need five cans of tuna fish today because that's not a nice idea any more. Only because, that's more quantifiable for people. And here, I would love to see the research that tells us about cancer and can people produce this?”

[TJW Additional prompt: Explains that this is an equation for every single toxic. It definitely talks about the bioaccumulation factors for each toxic, how much does this accumulate in a specific type of shellfish, but it's not a specific type of shellfish, but it's fish in general. A shellfish grower asked a question the other day about whether the bioaccumulation factor was for just finfish or if it was her oysters.]

“Is it the liver, is it the mussel?”

[TJW Additional prompt: This was the case in the China ban, were you affected by the China ban?]

“No.”

[TJW Additional prompt: Talks about china ban and large issue was arsenic and large quantities of arsenic in geoduck skin and gutbag; and potential transition from wild geoduck to farmed. Then talks about people being advised not to eat crab butter or shrimp heads as this is where the toxics are. It's sad that we have to think about that.]

“But people are and that's smart, because we do need to. And I guess I would hope, I mean... So, yah...”

[TJW Additional prompt: Discusses how this is a difficult topic. Then talks about how she mentioned accumulative affects and that the water quality standards equation doesn't take into account accumulative effects from different toxics on top of one another as they don't know how to yet.]

“Because when you first explained it, I was, in my mind, thinking of everything together giving you that versus one toxic at a time, which is more doable for measuring...”

[TJW Additional prompt: Talks about four different equations for M carcinogens, FW carcinogens, M non-carcinogens, FW non-carcinogens; and the current proposed rule could be that most of M carcinogens will remain the same. Mentions press conference and rule being out end of September and issue of EPA and waiting to see what they say.]

“It's fun to understand this other part that people are looking at.”

[TJW: Explains that before doing this research, I assumed that a lot of shellfish and fish were tested for a lot of this, but I found that there isn't. Talked to DOH employee about Puyallup beach that was re-opened and the toxics testing in that area the one time.]

“So, this new rule, will it make them test more?”

[TJW Additional prompt: Not necessarily.]

“That would be other deal.”

[TJW Additional prompt: They actually talked about taking out the small amount of testing they do on 303d listed waters. A lot of the tissue sampling is for the biotoxins and things that will make you immediately sick, but when it comes to toxics, then there have been studies, one or two year studies, but not much regular testing. Thanks her for interview.]

“Thank you! I loved this. It's wonderful that you're getting this [thesis] done. I think part of this, the hugest deal, at least for me, is that I get educated on issues that are happening, so I appreciate that.”

SHELLFISH GROWER 5

Background

TJW: What kinds of shellfish do you grow and sell?

“Currently, I grow geoducks.”

TJW: Where do grow your shellfish?

“It's all down here [south sound]. I'm down in [south sound reaches]. And I'm about to lease some tidelands from the State in Mason County.”

TJW: How long have you and/or your company been in the shellfish industry?

[omitted to protect anonymity]

TJW: How/why did you get into the shellfish industry?

[omitted to protect anonymity]

[TJW Additional Prompt: How was it when you first started out?]

“It's actually, it's gotten a lot simpler. Like anything else, you take a complex thing and part of your solution is to bring efficiencies as you can and ultimately that makes it simpler operations.”

[TJW Addition Prompt: Is there a reason why you went from the clams and oysters back to the geoduck?]

“I started doing geoduck. It [the transition away from oysters and clams] was more about the oysters and other things were more about I needed projects to keep my guys going. If I was going to have this operational capacity to do large geoduck plantings, I needed to have trained staff, so I needed to have cash flow to keep them around so these other projects basically kept them busy. I probably still, I own oyster lands in [South Sound] and we, I can very well see in the future, my plan is to get a clam and oyster farm going over there. Just because I enjoy it so much.”

TJW: Would you say that this is a family business?

NA. See above.

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

See below (under Water Quality Standards section)

TJW: How do you primarily sell your seafood?

“All to a broker, I don't do any direct sales. I don't do any retail and I sell exclusively to shellstock shippers in the US. In Washington state. On harvest days, I go to the boat ramp and I drop them off and that's where my responsibility ends. There are a handful of brokers that I work with that deal almost exclusively, well actually they're all involved in both wild and aquaculture.”

[TJW Additional Prompt: And they're going nationally or?]

“No, I think mostly they are selling, they are exporting.”

[TJW Additional Prompt: Exporting to China and Far East?]

“Mmhmm.”

[TJW Additional Prompt: So mainly international is your market, but you go through the broker and deal with all of that?]

“Exactly. My market is the boat ramp.”

TJW: What or whom would you say is your biggest market?

See above.

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a shellfish grower? What would you say is your top priority?

“My top priority is always getting my juvenile seed through their first couple of years because that is going to ultimately determine, it all basically boils down, how good of job you did planting. Everything has to, all of your ducks need to be in a row, your animals need to be happy. If that goes well, the farm, the crop, will turn out well. So a lot of my energy and priorities are surrounding that. Outside of that, I would say the regulatory environment is my largest concern and I don't really want to go into it, but that was probably the main reason why I have downsized my operation from continuing to try to manage a small business with staff and lofty goals and things like that. I've basically, it's forced me to really step back and look at why I'm involved with it. And why I'm involved with it is idea that I want to be working toward, have something that can be a future financial resource for me. Because I'm not making my living from this, but I really enjoy growing things, I really enjoy the farming part of it.”

[TJW Additional Prompt: But you don't enjoy the regulatory business part of it?]

“But it's a necessary, I mean I understand that we were relatively unregulated until 7 or 8 years ago and now we're going through some growing pains and it's still kind of an unknown thing, the reason why we're expanding only in Mason County is because of the regulatory environment. I have lots of opportunity to lease ground and work in Thurston County or in Pierce County, probably for me more in Thurston County because that's where I'm already operating. And I'm turning people down because it's not worth it to me.”

[TJW Additional Prompt: How long does it take to get through the necessary regulations to open up a new area or to get it going?]

“To lease a new piece of property, if it's leased, my understanding is, and I've really walked away from it, so I'm not clear on exactly what, but my understanding would be that you would need a substantial shoreline development permit in Thurston County. To apply for which is about a \$5,000 application fee, and then there are consulting fees to get the application complete and thus run \$3 to \$5,000 a piece. Then there's an additional use permit, that's about \$7 or \$8,000 application. Then there is your... and for both of those, there's a public process, that can be appealed and that's what's held up a lot of things from advancing in Thurston County, which means attorneys and legal battles and then there's the federal permits, there's your nation-wide 48 permit, which doesn't cost you anything outside of the consulting that you have to do to get it done, they're not charging you like the county does. Regardless, you're looking at least a year's worth of work, \$15 to \$25 thousand dollars, or if you get into a legal battle, like the [other shellfish company] have in Henderson Inlet, you're talking about hundreds of thousands of dollars and you haven't even planted anything yet. And so, I'm not interested in doing that. I'm much rather go somewhere like Mason County, which invites this kind of industry, does not put up a

bunch of roadblocks to make it happen and the state is now fired up about starting something or finishing something they started back in 2006, which is the geoduck program. Yah, the regulatory is, you know, is right up there with bookkeeping for me. Something that you have to do, but you kind of put it off until you absolutely have to do it because it's no fun."

[TJW Additional Prompt: So those are the main two then in terms of priorities?]

"Yah, for me, I have really lately tried to, I was getting burnt out on the regulatory world and so I had to step back and cool off for a year, it's been a year. And now I'm re-engaged hands on with the farm and I'm really enjoying aquaculture again and liking it very much."

[TJW Additional Prompt: Back to the roots?]

"Exactly, back to basics."

TJW: Would you say that other geoduck growers have similar issues?

"I think they probably have more, the larger companies have more of a PR job to do. And they're also big targets for the NMBY groups that are trying to slow down, shut down, abbreviate. I think that now a lot of some science has happened that the cooler heads are prevailing and we have a new regulatory framework and the industry is allowed to continue and expand, which is good, but each property, each new venture is a very hard one and so, as a grower, you have to be very strategic about where you invest your time and money because the upfront costs are substantial."

TJW: [Optional] What are some of the other kinds of issues shellfish growers in Washington are facing?

See above.

TJW: Have you been affected by growing area shellfish bed closures? If so, how often?

"The things that would close geoduck harvest is PSP and south sound has kind of a mixed bag as far as the history of that. Here in the very south sound, we typically don't have PSP closures. They are very rare down here. I have not personally been closed. I have not had, I've not been in a position where I've wanted to harvest and couldn't. That's really an issue for people who are further north. I have friends who farm in Discovery Bay who are closed down seemingly all the time."

TJW: What would you say are your customers' or broker's main concerns and questions regarding your shellfish?

"Mmm. Well these days the only... they don't actually have any questions. Well, the questions that they do have for me, if they're unfamiliar with the place that I'm harvesting from or if it's a new crop, is they're always interested in the breakout on quality is cause there's... for every load of geoduck you bring in, they're graded into one of seven different grades based on size and basically appearance, aesthetics. And they are graded like that. So, if they are familiar with the place, there are no questions. If they are unfamiliar, they

want a sample or they want my read on what I'm going to get them, what percentage of #1's are we going to get out of this or whatever. The questions related to China closure have not really been for me directly, they've been more about the growing area. So, other growers have been involved with sending in test samples from different growing areas to test them for arsenic and we've come up clean on that."

Chinese Ban of West Coast Shellfish

TJW: Have you been affected by the recent Chinese ban of west coast shellfish?

"We're a very small farm. I didn't have a lot on my harvest docket for this last winter. I harvested through November and then stopped and then wasn't planning to harvest again until spring, so when the ban happened at the end of November, beginning of December, I wasn't harvesting anyways, so it really didn't affect me. But I am an anomaly in this business being that we're so small."

[TJW Additional Prompt: But you were saying that in the tests you sent in, that your growing areas have been coming up clean?]

"It only happened once as far I as I know. They had us submit a sample from the growing are, those samples were sent in, tested, came back fine for the arsenic, so we're allowed to export from that spot. And I think it's less of Washington State requirement and more of a Chinese requirement."

[TJW Additional Prompt: Talked with NWIFC co-worker about this and still negotiating how many tests to do, etc.]

"Yah, I know that it's definitely not back to normal, that's for sure. I wanted to harvest this spring and couldn't because the broker didn't want it. They were having a hard time getting it moved in even after the ban was lifted."

[TJW Additional Prompt: Having a hard time getting it moved into China even after the ban was lifted?]

"Because I think there are fewer importers over there that have met muster. That's coming, I'm sure, third hand, so it's hard to know."

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

Yah, are you talking about... the fish consumption rate is what I'm most familiar with."

TJW: If yes, how did you hear about this update?

"Some years ago, it was... well, I've been aware of the problem for a while. And I don't know if it's because of... so I'm a subsistence fisherman, spear fisherman, and grew up around here. In central and north sound."

[TJW Additional Prompt: So you're from this area?]

“Yah, from Seattle, from Everett is where I grew up, a lot of time collecting crab and shrimp and fish and things and you know, lived in Seattle for a long time. We would go and take ling cod and things off the [local marina]. I began to feel increasingly weird about that. You see, if you go to these public fish piers, you see all of the people that are out taking whatever right off the Duwamish or some other places and you're thinking, man I wouldn't eat anything out of here. So that always kind of been the back of the mind and I can't remember the sequence of events exactly, but the fish consumption rate, I think it was through the Commission, they had this thing where you would go and you would sign up and figure out what your score was...”

[TJW Additional Prompt: The what's my fish consumption rate?]

“Yah. I did that and involved somewhat in the puget soundkeeper's lawsuit. My [omitted] group was talking with them. We had some of the guys go and collect lingcod from the Shilshole breakwater and they sent it in for a test.”

[TJW Additional Prompt: I recall them talking about this test]

“So my friend went and shot the fish.”

[TJW Additional Prompt: He had said that they didn't get the results back in, but that they did eat some.]

“No, it was not good. The results were not good. All three flame retardants. Dioxins. It was not good. For me, I feel like this place should be functional and healthy enough for us to be able to sustain ourselves and, you know, I am kindof, I don't buy seafood. I produce seafood and hunting or fishing or growing it or whatever and I feel very connected to the fact that we can sustain ourselves from the natural production of the place. And it feels very strange to have that threatened by toxic shit that's in the water. And it definitely has me think about where I collect from. So most of my reef fish that I get now, I go out to Neah Bay and get. And part of that's because the regulatory...”

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

See above.

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Absolutely. Our fish consumption rate is antiquated and what I do know is that feeds into the NPDES permits and that's totally ass backwards. It shouldn't be... the fact that we're putting anything in there seems a little silly to me. Especially since you have efforts to manage things like fisheries. Try to figure out how much of something we can take. That seems like the cart before the horse if we're talking about permitting municipalities and industries to put stuff mostly we don't understand what it's affect on the environment is. Just pour it right in to Sound. And the irony of the push back that we get as a shellfish industry for all the harm that we're doing to the environment just seems like I want take our critics and say, this is the real problem. If you're really concerned with the health of

Puget Sound, how can we continue poison it and expect it to be there for... I mean I think about when my dad was a kid and the stories he would tell about abundance and the things they would catch and take and eat and where they would do it. It is so totally different than my reality and if the reality shifts in that same trend for my son, he's not going to have, he's not going to be able to eat anything out of the Sound. And it'll be over. That's the thing that freaks me out the most. And I'm someone who's not necessarily... there's no special tradition, there's no special culture for me that links me to this thing, it's my choice, so I have other choices. I can go to the grocery store and get my seafood, buy farmed fish from Costco or whatever. But I choose not to. Other people don't have the same choice that I do. And that's I think the communities that really feel the effect of this. We spend our time, at least my day job, I spend my time thinking about estuary function and habitat restoration work but we're fighting to do one thing while at the same time the powers that be allow for processes to happen that totally our actions moot. And I'm just glad that they're talking about it and I'm glad that we're talking... I wish that the governor had come out with a higher number than he did because I feel like that was his first foot forward and whatever we settle on is going to be something less than that.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Industry. Industry is it because they're the ones, they're the only ones at the table that are pushing back. They're the only ones that have something to lose. I mean I get the governor's predicament, Washington is not the friendliest place to do business and he wants it to make it friendly for our big businesses, but at the same time, Ohio doesn't have Puget Sound to protect. We do. And I think I'm not in his shoes and I can't conceive of all the irons in the fire and the different things to juggle. It just seems to me that it should be important to those industries too that Puget Sound is here for their future. The fact that we're all here because of this place and we're all coastal people and the coast is here and the Sound is here and [unintelligible], but it's also an environment that is only so resilient and we've made big improvements over practices in the 60's and 70's and 80's. And I think that we can... that's not good enough though. We still have big problems with nutrient pollution and that's something that we can get our hands on. Things like toxics, that's a whole other ball of wax and you talk to the People for Puget Sound back when they were still around and they wanted to, when Puget Sound Partnership was just getting going and looking for action plan inputs, they were like look, all of those forage fish and all this other stuff, it's find to think about, but the big problem, the gorilla in the room is toxics. Point source pollution. And that's what's ultimately threatening this.”

[TJW explains current rule with cancer risk rate and legislature toxics control act]

“Watered-down.”

Follow-up from Grower 5 via email five days later on 8.18.14:

“Nice to meet you Tiffany. I've been thinking about your questions and I have some thoughts that keeps bubbling up; thought I would mention them.

I find it interesting that the standard for "how much to pollute" is set by the "average" persons risk for cancer. That approach doesn't provide any protections to access down the road.

I've been haunted by reflecting on how things have changed in 1 generation regarding access to seafood on a subsistence basis.

Makes me wonder if a better approach would be to set the standard based on "persistence of a functional estuary" or "persistence of fishery X" or "compound X concentrations in species Y"; these would force us to understand what we put out/down the drain and its effect on species and habitats.”

SHELLFISH GROWER 6

Background

TJW: What kinds of shellfish do you grow and sell?

“Pacific shellfish, pacific oysters I should say. We also have manila clams, which is a small production. I mean proportionate wise, our shucked meats is our main business.”

[TJW Additional prompt: So not in the shell?]

“No, we do some of that now actually. We hadn't for a lot of years, we did for a few years and gave it up again. But now being a part of [large distributor], their in-shell sells, there's an existing plant they already had in [coastal city], that's really small, so their volume is limited, so we've been doing some in shell again. Whole, shucked, and clams. We are half-owners with [large shellfish company.]”

TJW: Where do grow your shellfish?

“[Coastal town] which is right here. [Other coastal town], which is the next bay up and then also [town in] California. We have a plant there. We actually do truck some... [interruption due to phone call]. Some of the shellstock we do truck up here for production, otherwise they do kumomoto oysters, that's their biggest crop down there and those are shipped out whole and they ship those out direct. So, I guess as far as in shell goes, we're pretty big in that arena, just not at this location.”

[TJW Additional prompt: Do you do any tumble bag oysters]

“Um, we do sepa trays, I've never physically seen them. But they're basically trays and there's like buoy lines and they anchor each line down. I hope I'm not wrong about this, but they're basically a long line and it uses the tidal action, the wave action, to move them. I think some call them flip bags.”

TJW: How long has this company been in the shellfish industry? How/why did you get into the shellfish industry?

[omitted to protect anonymity]

TJW: Would you say that this is a family business?

[omitted to protect anonymity]

TJW: [Prompt] How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

[omitted to protect anonymity]

TJW: How do you primarily sell your seafood? [Prompt] Are you mainly a wholesaler or do you engage in retail? Is the retail online, retail store, farmer's market, restaurants...?

“Retail, almost all retail. We have a retail window here but we don't advertise. We pull directly off production, it's mostly local, people that know us, local restaurants and that kind of thing. But everything else is largely retail. And a lot of east coast. We do the [large retailer], which is really our local retailer, almost all of it. And we service [Seattle restaurant], most of their oysters. Otherwise, it's you, know [large retailer], that's one, that's kind of random. They go through their distribution and we wouldn't even know, because we don't ship directly obviously. [Lists multiple large retail stores], a lot of the bigger chains that we don't see here.”

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

“That's tough. You know, our biggest customer is [large retailers]. In volume. It's all northwest, parts of Oregon, I don't even know how far reaching it is. The only way I'd know is if a store had a problem or if it was a consumer complaint. Sometimes I've heard things, well, I didn't know we were out there, in parts of Idaho or something. Our biggest distribution, like I said I don't always know where it's going from there, is [mid South Sound]. And that is Washington. And then after that, well, that's a tough call. I mean, it could be even Florida, [unintelligible] all but one that we deal with are right there, that's a big chunk. With the [other large retailer] being, see [other large retailer] is second base...”

[TJW Additional prompt: Do you ship or sell internally?]

“Not much. I mean, we have, we've done some frozen whole, shipped some frozen pouches. And actually we do have [asks colleague who they sell to outside of the country besides one company and she says no one]. So, one account”

TJW: If in Washington, to which county or counties do you sell the majority of your shellfish?

See above [sells mainly to a distribution center in Pierce County].

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a shellfish grower? What would you say is your top priority?

“Time to temperature.”

[TJW Additional prompt: So, just temperature?]

“Yah, I don't know, I'd have to think about that longer. It goes back to the VP. You know, I'm on all the committees pretty much. I think I'm on some that I'm not even aware of. But, the approach that the state is taking, well, [I'll] go back a little bit. Well, there's the ISSC, do you know what the ISSC is? So, under the model ordinance, there's a protocol for vibrio. Some states haven't adopted their own that have been approved by the FDA will use the model ordinance. Well, Washington has come out with their own plan and it's really based on illness, so it's a reactive program.”

[TJW Additional prompt: I'm told that some other states look to Washington? But that also that Health is looking at a risk-based plan, rather than a reactive plan.]

“Well, it was a reactive program, it still is right now. And really, what we want as an industry, I mean, we work together, we'd like to see a more proactive program. Like you said, based on risk, now to get that, a lot of cooperation. One is the servings basically, which is the even up in debate as to what a serving is. You know, because there's definitely been more illnesses over the last ten years, I wouldn't say it's been steady, it's been up and down, and a lot of it has to do with temperatures, but overall it's on the rise. On the other hand, I know, and a lot of people know, that especially the in shell with triploids and quads so they don't spawn, the markets are just, compared to 12 years ago, or even 6 or 7, there's definitely a lot more.”

[TJW Additional prompt: Do you think that's the reason then, the triploids available in the summer?]

“That's a big reason, but honestly spawning oysters, they're certainly nasty. Bottom line is, there's more industry out there, lot of expansion. And with the summer sales where it really hits, where it makes a difference, it's a big deal. That's one. Temperature of water, air temperature, exposure time. It's basically it's all those elements going into a calculator, there's a calculator that exists, I don't remember... I sat there and listened to it all down in Oakland. I honestly don't remember where this calculator originated, but it's a risk calculator, it's built for similar things. Anyway, that's where we're at right now, we're basically coming up or throwing some darts if you would, more or less. We know some things, the illness investigations, they look at getting all the information they can, that includes water temperature, air temperature, exposure time. You look at a lot of different things. So, what we're doing as an industry is we're taking this information and keeping it and we're going to start putting it into the calculator. You still have your illnesses, that's your indicator, you have illnesses in this area or this area, some area's are notorious. So, what will initially happen we'll have limits on water temperature for harvest, and different exposure times and then as we move on we will learn more, obviously. Maybe that's not enough, maybe we'll still have problems.”

[TJW Additional prompt: Sounds more proactive than the current 4 illnesses for a closure. Interesting that you are all taking your own samples.]

“The one thing that has been a big deal is the servings. Some people think it's really hard, how do we do that. It depends on how you're keep track of your production and your

records, for us, it's nothing. So, that's been a lot of the issues we've come up against, things that will be hard to do, or how do we do that. It depends on how you look at it. Fortunately, even... some of the people who sit on these committees are looking at this backwards. I mean, it is a problem. As an industry, you know, the last thing you want to do make people sick. It's not really good for business, usually. So, anything you can do or that we can do to reduce that is a good thing. Some of them are unfortunately looking at it from, what can I do from keeping myself from going out of business. There's the greed factor. So, basically getting back to the question, the time to temperature is a huge deal because right now as it stands, the coast has during VP months, if there's no illnesses in the area, 10 hours from harvest to temperature controlled, so under ice or refrigeration, whatever it is. What we're moving to is time to temperature because we know that 50 degrees and under, the growth is very little if any, 50 and above and depends on, it stair steps, your doubling rate goes up as your temperature goes up. Basically, we're moving to time to temperature. We're throwing darts more or less, looking at what we think is good. For coastal harvesting, we're looking at starting out with an 8 hour limit, that's based on risk. For a low-risk area, we have 8. If you're a risk level 2, whether it be illnesses or the water temperature, those kind of things, that was 6 hours. Level 3 was, I think, 4 hours. So, it was based on risk. Also, methods of harvest. If you harvest right off the bottom, like in the mid-day, exposed, your time to temperature is a much smaller window. In my opinion, that's [unintelligible], but they've heard me argue that. I'm a big proponent of harvesting out in the water, your animals are filtered, the VP levels are always at their lowest, because that's a big deal. You pull them out of the water and it's either in there or it's not. There's either a lot or very little. That's first thing, you're better off with low numbers to start with. The second thing is exposure, you can take something that's great and make it very bad.”

TJW: Would you say that other shellfish growers have similar issues?

“I bet you, if anyone had another one, it could be a financial thing with the company or something like that. But that's [temperature] got it be it. And we have the resources, which being [name of company] we could have done that, but being part of [larger company] our resources are much greater. We're basically putting in a new ice machine here, which will have a lot more capacity. We're gonna have a nice machine at our harvest location, so that we can ice the trucks when we load. Between those three machines, plus [local city] we're putting a new machine there, so it's four new ice machines, it's gonna be a huge expense. It's happening next year before summer.”

TJW: [Optional] What are some of the other kinds of issues shellfish growers in Washington are facing?

NA. See above.

TJW: Have you been affected by growing area shellfish bed closures? Due to vibrio? If so, how often?

[See below for PSP discussion] “Not anymore, because the sewer plant is new, apparently it is in [local coastal town] now, a brand new plant. There's a pipeline that is actually right here and they want to cross the ponds right over here still and I think we

had two closures that I can remember from that breaking. Almost always when it happens, it's like something's wrong, and they find out days earlier. Now, [in California growing grounds], there's some outfalls there, obviously with the population. They've had closures. I'd say, on average, two or three a year for them."

[TJW Additional prompt: So there are more closures in {California growing grounds} than here? There more due to population and here if something goes wrong?]

"The one PSP years ago, we've have some areas basically the way we're licensed, every area that we have is either open or conditionally approved, and what that means is that with environmental studies and all that, they've determined with various amounts of rainfalls, for example, like up in [other coastal town where they grow], if you get over an inch, it's so long, a half inch, it's basically rain related to time, some areas can be closed for that, that happens. The only one, other than just those would be the pulp mill. [Other coastal town], It used to be [timber company]. They have a pretty radical treatment of their own outfall, which is necessary. Of course, we're looking at total fecal and with pulp, there's a lot of fecal. It comes naturally in the environment. They've had time where their treatment either failed or somebody didn't do something right. So, we've had a few occasions where they've actually closed [other coastal town where they grow]. They have a new means of treatment and new procedure up there and I don't think we've been closed for three or four years. So, that's good. Things on the horizon, as far as that goes, demoic acid has been something, especially like [larger shellfish company], they've been closed on occasion, it usually hasn't been a problem, it's been a coastal thing in razor clams. But, over the last few years, it's kindof working its way south and inward, it looks like. I think Sequim, if I remember right, someone up in that area, had just record numbers, just through the roof. [Larger shellfish company] was been closed. So it's gone beyond the razor clam and the coastal resources and it's been more of a threat. Something to think about. And then DSP. Instead of PSP, it's diarrhetic shellfish poisoning, I'm pretty sure it's always been around, everyone thinks that, but there's been no testing for it. The State of Washington now has tests, so now they're looking at it. [Both coastal towns where they grow]. they're pretty strict limits on that, that's something that could become something."

TJW: What would you say are your customers' main concerns and questions regarding your shellfish?

"Well, concerns, if I were to say concerns, I'd call it a complaint. Size. Biggest one. Biggest reason for that is our market, we're an east coast market, a lot of it, the gulf and the east coast oysters are very tiny in nature, they're just a different animal. In fact, back when it was the CFR 161 30, the extra small pacific was the same as a large Gulf oyster, but like I said they're different animals. When I look at the Gulf ones, it seems like, you can see through them. They're little boogers. They are a lot different animal, they're even so much, that an extra select, which you'd you think would be a small oyster, is actually their big oyster. When I say select, that means ones that have some meat to them. So, given that, some of them we do side by side, where they'll have their product, gulf or east coast, wherever it is, and then some of ours and some of them just have our product. The reason why we're in those markets is because we have a meatier oyster and a lot of people appreciate that, they don't cook down to nothing."

[TJW Additional prompt: So their not going necessarily for the raw oysters?]

“Yah. On the other hand, people who are used to that or have never purchased before. Because we'll get complaints where they'll say, well there's this many in there, and well, that was perfect spec. They just didn't know what it was. Kind of an educational thing for them. So, size. And then... that's the biggest one. Sometime you'll have shell particles and that, but even our containers all have disclaimers, just people wash them, be careful.”

Chinese Ban of West Coast Shellfish

TJW: Have you been affected by the recent Chinese ban of west coast shellfish?

“Not at all. It was Hong Kong, and that was the difference. That was a big deal for a lot of, you know, I sit on some advisory boards for the state health and I talk to a lot of people, like the geoducks. Some people, it was a big deal. You know, I don't know, I've heard what happened and what they did to fix it, but the truth and really what happened there, is kind of up in the air, I'm not saying it couldn't happen. That's one thing I've heard over the years, we do our own sampling, and the state, of course, does their own, and sometimes I'll back them up with some. I've learned one thing, you can sample one area or bed three times and get three different answers. And even when it comes to like closure status, like one sample might tell you you're closed, and one might say you're not.”

[TJW Additional prompt: Just in terms of temperature?]

“Well, sometimes I think it's per animal, I think it gets pretty specific sometimes. We all know that within this industry, but it's still one of our best methods of verification.”

[TJW Additional prompt: Just multiple testing?]

“And that's one thing we do now to, as a company, and even the state, they'll do that now, they'll do more sampling. More is better, if the budget allows it. It's always a juggle between, especially somebody like the State of Washington, who's always strapped, like everyone. They want to do all this extra testing, but you have to think about how much money you have and the resources, it's tough.”

[TJW Additional prompt: So the testing you guys mainly do, in conjunction with Department of Health, is that for fecal, vibrio, and biotoxins?]

“Yah, vibrio is a big one, summer time obviously. That's really the committees that I'm on, it's strictly vibrio. It's been a hot button for as long as I can remember, a good ten, fifteen years even. A lot of it has to do with the Gulf and the VP, which is obviously a more severe strain. You know, the strains that we have is not good, it makes people pretty sick, but VP's been known to kill quite a few people if you are compromised in any way. So, no, it is a big deal, I go to the annual ISSC conference and I'd say that I've never seen less than half the agenda committed to VP, it's a pretty big deal. That's not all there is, viruses are on the forefront. The thing about viruses is that the technology is a lot better. The testing methods and some of the ways that they look at outfall areas, like sewage, their methods are a lot better, more accurate is a better word. So, that's something. You

know, PSP is a huge deal for a lot, but I don't, we don't think of it much out here. I take it for granted more or less, out in the coast we don't have much of it, we've had a few hits here and there. We were actually closed once in '97, but other than that..."

[TJW Additional prompt: So no other closures for PSP other than that. I know that that is a big problem elsewhere.]

"There are some areas that are closed most of the year. And then it's all about sampling. A lot of them are geoduck tracts and they'll take meat samples. You need, I think, two or three consecutive samples, which is basically two or three weeks where your samples are open and they don't seem to be getting there."

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

"I've heard about it, that's it."

TJW: If yes, how did you hear about this update? What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

"Probably through [grower's group], it might have been an email. I talked to [staff person there] direct, so it could have been, it seems like something like that. Enough for me to register it. So far, to me, the Clean Water Act is the change for our Ecology discharge permit. And the only thing it did change, we would always record our fecal, our discharge, the totals, it wasn't a part of our permit or limited, but now it is. But it should have put us in the same category as a city sewage treatment, any outfall like that, so 200 daily 400 average, no 400 daily 200 average."

TJW: Provides background. What is your perspective on this issue?

"That number's thrown out there a lot [10 to minus 5, 10 to the minus 6], I've seen risk calculators that use that."

"Well, chemicals. Mmm, I guess it depends on what they're looking at. I mean, we use some obviously. Being sustainably certified, we use as little as possible. Look for methods like steam and hot water, hot water will get you a long ways. Yah, that could be a big deal. Like I said, we're still under this permit now, in compliance schedule, which I'm probably a little behind on. We're basically looking at our fecal right now. It's naturally in the oysters, they filter everything that's out there. We get small numbers, nothing usually anywhere as close as what the 230 mpm limits are what we're used to. Problem is [unintelligible] they made us have these, to design them to contain the solids, you know what solids are like, especially on a warm day. It's funny, I knocked myself out on these samples, looking how could there be so much in there, when there's so little here. I mean even the river has some, the main discharge for the city, the runoff is right here behind us, it basically runs, when the tide is going out, runs right to our pump. You're getting combined numbers. You could have thousands in the water, but with solids, millions, that's crazy numbers. I mean we clean those out when it's full, but that's

every month or every couple weeks when we're in the season. That's a big deal here right now. If you're going to treat that only, it's not like it's not doable. It'd be like a treatment, a full treatment, and depending on what kind of water volume you run, it could be a heck of a system. I mean I've seen some, we've looked at some. But we haven't gotten to that point yet. Right now, what I'm using, is effective micro organisms, I think I said that right. It's basically a positive bacteria, it eats the bad, we basically drop that down the drains every day. It improved the outfall considerably. It's just not real consistent because the way we do it is kinda random, we're doing it the same time every day, but the dosage isn't real consistent. But, just using that, it's done a lot.”

[TJW Additional prompt: And I'm not sure how much of this would affect fecal, I think it would be more heavy metals based and that type of thing]

“Well, stormwater's really pushed that direction. We have a stormwater permit and we test for five or six right now. We're always high in zinc, I've written more than one letter, I mean oyster shells are huge in zinc. It's everywhere. Water's running over oyster shells and it's crushed up and powdery. Basically half this area and town is oyster shells.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“I'm not an expert in the field. You know, the people that I do know, [person at Department of Health], it's not like I've had any in depth discussions with him since he's over my head somewhat and some of the people in the shellfish office that work with water classifications feel, and I don't know if it goes into depth in chemicals, but they feel what is done and what we're doing now is more than adequate. I've heard that from that.”

[TJW Additional prompt: So what you've heard from them is that the water quality standards that we have now are enough and good to go?]

“It's just like, I hate to go back to fecal, but it's what I'm so in tune with. They did a lot of studies on the Willapa and they got some big numbers upstream. Well, of course, they went up the creek and here and there are cows and failing systems, stuff like that, or systems discharging direct, that'll happen. But on the other hand, our dilution here is so great and the numbers down, even here, are almost nothing. When you look at our discharge that we have, in this bay in here and in general, we know that it's a non-factor. But, from Ecology, we had a lot of meetings on this, this was obviously an item of big concern. We heard the words level the playing field, many times, and I've heard that before. Because there are a lot of industries like ours that are affected, or what's a good word, compromised. So, in other words, numbers that I could put out without any kind of treatment, in that water way...”

[TJW Additional prompt: Because you have more mixing with the ocean influence, while someone in Puget Sound might not have that level of flushing?]

“Yah, we hired as a group, [name of group], we had an engineer. I don't remember his name right now. But he's dealt with a lot of it. A lot of it had to do with the CP0D and the ammonia too, the oxygen, that discharge. Another one where we crunched the numbers, knowing this place is no problem and it still is. We do our summer time sampling and

combine the numbers and we are never even close to the limits. But we also know that the limits they put on us are kinda out there. But then again, I heard that term, same thing, in that arena [leveling the playing field]. Just so that one doesn't have an advantage over the other, just because the water that you discharge into is in better shape to start out with.”

[TJW Additional prompt: So you think that they might be putting these levels a little too high, in order to level the playing field?]

“Well, I'm not saying it's the worst thought to have to keep things uniform, but I guess I'm kinda torn. I think it should be related to your actual situation. If you take the dilution rate into account when you're putting limits on someone. If someone is in such a compromised area where any kind of discharge is bad, it should be addressed to that area and specific to that problems that already exist or could. [But] it all comes down to resources again, it's a lot easier to say, well, this is it. I understand that too.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

NA. Didn't ask.

SPORTS FISHING GUIDE 1

Background

TJW: How long have you been a fishing guide?

“Ten years, I think.”

[TJW Additional prompt: For the same business?]

“Yep.”

TJW: When was your company founded / how long has your guide business been open?

[omitted to protect anonymity]

TJW: How/why did you get into the fish guide business?

[omitted to protect anonymity]

TJW: What areas do fish? How much of the time do you spend in Washington?

“We fish the Columbia, the Snake, the Clearwater, and the Grand Ronde for the company that I work for down here. I also guide up in Alaska on Cook Inlet for a different company. I only work for a month up in Alaska, in July.”

[TJW Additional prompt: That's pretty hectic then, going from run to run.]

“It's not bad. We spend the majority of year back home in [eastern Washington] and just sparsely in other locations, so we spend a month down here, we do some Walleye fishing

in Umatilla and the majority of the year is spent on the Snake and the Clearwater, and a little bit on the Grand Ronde.”

TJW: Is the owner from this area? If not, where is he from and how long have he lived in Washington?

[omitted to protect anonymity]

[TJW Additional prompt: Do you specialize in salmon?]

“Salmon, steelhead, sturgeon, bass, walleye, and I also do halibut.”

[TJW Additional prompt: How do you primarily fish? Off the boat with a line in the water?]

“Yah, it's 90% of it's done out of a boat, but the other 10% is off the bank, but I'm the only one who does the drift boat trips off the Grand Ronde and that's bank fishing mainly.”

TJW: How many sports fishermen do you take out per week?

“It varies depending on what time of the year it is. This time of the year, it's anywhere from 4 to 6 people a day. I have four people today, six people tomorrow, the next day I have 2 people. It's between 4 and 6 on average. Back home, our season's spread out so much longer, it runs from the end of September until the first part of March, so we're not seven days a week so much, it's more like 4 to 5 days a week. Typically, it's six people a day.”

[TJW Additional prompt: How many hours a day are you working?]

“Between, well just on the board, between 8 and 10. But a normal day is about 14.”

[TJW Additional prompt: Because you're cleaning fish?]

“Yep.”

TJW: Who would you say is your typical demographic in regards to your customers?

“It's... the majority of it's corporate, but we do get some family groups. I mean our business is more high end clientele. I mean we're on the higher end of the scale as far as prices and that goes, so it weeds out your lower end clientele, if you want to call it that.”

[TJW Additional prompt: And that's who you market to?]

“Yah, we're geared toward a higher end clientele. A lot of it is corporate. I took, we take a lot of electrical contractors and that sort of stuff.”

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a fishing guide?

“Well, our fish runs for me, they're inconsistent. One year, for salmon, we have a really good run in the spring, and the next year it's down, and the next year it's down, the next year it's down, then we have a really good run, then we have a mediocre run and then we have a down year, so our salmon runs are very unpredictable, as far as our spring runs goes. Our fall run is really good, this year has been excellent, last year was really good, the year before that was really good, so our fall runs are pretty steady. Our steelhead run has been fairly steady for a long time and last year it dropped off, this year it's a little bit better, but it's not a lot better. I mean, where we're at, we're spoiled with our fisheries, if we catch 15 fish in a day, that's an okay day. Over here, on the west side, if you catch 15 fish in a day, that's an epic day. So, I mean, we're spoiled with our fishery over there. So, when we have down here, when we're only catching 12, 15 fish and we have to work for them, it's slow. And even though it's still good fishing, it's slow compared to...”

[TJW Additional prompt: Compared to further up-river?]

“No, just when we have a normal year, when you're catching 20 fish a day.”

[TJW Additional prompt: But you're saying that the fishing is better when you're back at home?]

“Oh, by far, by far.”

[TJW Additional prompt: Just all the time?]

“Typically, yah, unless like, the last few years, the steelhead run was down, so we had, well, the last two years, the steelhead run has been down, so we've had slower years as far as catching fish, which I mean hurts everybody. So, the fishing industry where we're at brings a lot of money into the valley. “

[TJW Additional prompt: Is that what the local economy is based on?]

“No, we have the mill, which paper mill, I'm not sure what the other side of it. And we have the bolt manufacturer in the valley, which is a big, they're they main commerce there.”

TJW: What would you say is your top priority?

“Yah, if the fish runs are good, then we're catching fish.”

TJW: Would you say that your main concerns and priorities vary by which state you are fishing?

NA. Not asked.

TJW: What would you say are some of the other kinds of issues that fishing guides in Washington are facing? Do you know of other fishing guides that have similar issues to yours?

“Well, I mean, it's, our industry's based on the fish returns. If they're down, then everybody's down. I mean because, where we're at, we sit past eight dams, and people

watch the counts coming over the dams and if the counts are down, they don't want to go fishing because they don't think fishing's going to be any good, so it's just, ours is all based on fish counts. And that's what drives people to want to go fishing, granted there are a lot of people that still just want to go fishing just because [small interruption]..."

[TJW Additional prompt: But you see that as a similar issue that everybody has?]

"Yah, that's what we have in our area. You know, over on this side, they do run predictions, but they don't have something they can actually look at and go, well this many people have come over and yah."

[TJW Additional prompt: So, that's the difference between the eastern side and over here [western side of state on the coast], over there it's based on fish counts and over here on predictions, more of a crapshoot.]

"It is, you have certain rivers that are known producers, you've got the Cowlitz, which is a known producer of fish and they count fish as they come into the hatchery, but once they're in the hatchery, it's too late. So, it's either, you go out and you try because you heard that fishing was good or you just go out and try."

TJW: What would you say are sports fishermen's major issues and top priorities?

"Yah, they want to make sure there's fish in the system they have a chance of catching."

TJW: Have you been affected and/or how often are you affected by fish advisories?

"Oh yah. Well the assholes that set the fricking quota for the lower Columbia, just specifically the spring Chinook, they set it to where they open it up before they know exactly the fish that are coming over. Well, the first fish that come through are the fish headed to Idaho and the upper Columbia, so they fish heavily on the front end of the run and they shut it down and they give an estimate on how many fish are coming over. Well, some years that estimate's not right, other years it is. But, they fish so heavily on the front part of the run that they end up shutting them down early and they don't get to fish the rest of the season and the advisory committees don't, between Oregon and Washington, they don't give a shit about upriver."

[TJW Additional prompt: They're more concerned with the downriver?]

"Yah, the population density is so much down here, I mean you could go out here in the spring time, on the Columbia around Portland, you could walk across the boats. I mean it's absolutely ridiculous, no joke, there's 10,000 boats out there trying to catch spring Chinook. They open up gillnet fisheries for them and gillnets are non-selective, they kill hatchery and wild, so that affects the ESA listed fish, which affects everybody, because you are only allowed a certain impact amount and they shut it down. So, it's just, the committee, the advisory committee, they don't care about [upriver area]. That really affects us up river. And it doesn't just affect Idaho, it affects eastern Washington, because there are a lot of people that fish the Columbia, they fish the mid-Columbia for springers,

and if they overharvest down here, they take the shares away from the upper river, so that doesn't make sense to screw the little guys. I mean, there's one business on the Snake River, there's a little tackle shop up there, the month of May, they make 30,000 dollars, 30,000. That's probably half of their yearly income in one month, if they have a fishery down there. And if they overharvest down here, they shut down the Snake, so they completely screw all the tackle shops and all the fishing guides and the whole fishery's economy up the river.”

[TJW Additional prompt: Do you have any closures or shutdowns due from DOE?]

“No. We don't have any water quality closures up there.”

[TJW Additional prompt: Any down here ?]

“No. Our water up there, right now, is 72 degrees. No, it's got to be warmer than that because at Tongue Point, which is just ten miles up the river, five miles up the river from Astoria when we have outgoing water, the river is 73. 73 degrees. And that's caused by the water backed up by the dams, overheating, and salmon don't do well, neither do steelhead, in water that warm. Not that the dams are going to be pulled anytime soon.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“Nope.”

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

See below.

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Well, there's always a need for higher water quality standards because you pollute the waters so much the fish don't survive, neither do the shellfish. And granted I mean, certain fish absorb or take in more toxins than others, you know, anadromous species that migrate out in the ocean are going to be different than land-locked species and so, you know, it's kinda hard to just generalize the whole deal, I mean our walleye supposedly have a higher mercury content, same with the land-locked sturgeon, then the sturgeon down here that migrate out to the ocean, so I mean, it's... I guess... are they grouping just fish as a whole?”

[TJW Additional prompt: They are, they're grouping fish and shellfish. There been discussion about this – accumulation at different levels, but also an argument about Puget Sound salmon having higher levels of toxics than fish that migrate out to the ocean, using this as an argument to emit less pollution...]

“Yah.”

[TJW Additional prompt: But you were saying, in terms of the dams?]

“Oh yah, our water quality behind the dams is horrific, you can't have good quality water that is 74 degrees. I'm sure it's 75 or something up in the canyon right now, and that's due to...”

[TJW Additional prompt: Stagnant water?]

“Yah, and they can't draw water off the bottom of the hells canyon dam, which is the first dam above us, because of low oxygen. I mean it's cold water, but it's low oxygen, so they can't draw it off the bottom, they have to draw it off the top.”

[TJW Additional prompt: so it's a dual sword of either too warm or not enough oxygen?]

“Yep.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“I don't know about barriers, I mean that's obvious, you got different lobbying groups that the more money they put in the politicians pocket, the better chance he's going to vote that way or she's going to vote that way, I mean, that's what lobbyists do, they pay off the politicians.”

SPORTS FISHING GUIDE 2

Background

TJW: How long have you been a fishing guide?

[omitted to protect anonymity]

TJW: When was your company founded / how long has your guide business been open?

See above.

TJW: How/why did you get into the fish guide business?

[omitted to protect anonymity]

TJW: What areas do fish? How much of the time do you spend in Washington?

“[Coastal towns] in southwest Washington.”

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?

“Yep, born and raised.”

TJW: Is this a family business?

NA.

TJW: How many sports fishermen did you take out per week?

“Probably 20 to 25. We would go five to seven days a week.”

TJW: Who would you say is your typical demographic in regards to your customers?

“I would say 30 to 50 year old males.”

[TJW Additional prompt: And you said that some were interested in catch and keep, but some were more interested more in wanting to learn?]

“A lot of our, because of the whole aspect of our business was to focus on teaching and even when we were out salmon fishing or anything else, we really focused on teaching people how to do it, which was kind of a new concept in guide fishing because don't guides don't want you to know how to do it because they want you to come back next week. And we're like, it's a credibility thing, we kinda thought, if you go out and teach, you become somebody that they look to as a teacher and they're going to come back to you regardless just because they want to hang out with you and enjoy fishing with you, so that's what we did. And it really took off, fast.”

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a fishing guide? What would you say is your top priority?

“Regulation was constant, from the day I started till the day I quit, we fought regulation. Management of fish runs, you know, there's not enough fish coming. You get a lot of feedback on: commercial fishermen get more than us, tribal guys get more than us, we get less. So, it's constant fighting between who gets the piece of the pie. That was the main concern, you know I wasn't... you know I fished when I younger, but wasn't a guide back when the salmon populations really dropped off, back in the late 80s and 90s. So, I know you're doing a lot of stuff on water quality, and that would be one of the things I would think there would be a correlation between is the industrial use of herbicides and the decline in salmon populations as the industrial use of herbicides went up, salmon populations went down. Seems like there would be a perfect correlation there. So, I think that's probably the major concern for our area right now, as far as me as a sportsman, would be herbicide use.”

[TJW Additional prompt: But in terms of being a fishing guide, it was more about regulation]

“Yah, I mean, that's the more direct. You're constantly [being told], oh, we can't keep the fish over here, but we can keep it over there, we can't fish this week, but we can fish next week.”

TJW: Would you say that your main concerns and priorities vary by which state you are fishing?

NA.

TJW: What would you say are some of the other kinds of issues that fishing guides in Washington are facing? The same as yours?

“I would think so. When I talk to all my buddies that still guide, it's constantly regulation talk.”

TJW: Do you know of other fishing guides that have similar issues to yours?

NA. See above.

TJW: What would you say are sports fishermen's major issues and top priorities?

“I think that probably, it's still regulation for them. Because it's just, we're constantly as fishermen, you're constantly in the book where you can and can't fish, what days, the regulations crazy, absolutely crazy.”

TJW: Have you been affected and/or how often are you affected by fish advisories?

“Um, yah, I don't ever remember any marine toxins other than clam digging, obviously. But, you know, I work in the oyster industry too for a few years, and we would have your normal red tide stuff. As far as fishing, I don't... no.”

TJW: [Optional] What are your views/experiences toward/with state regulation?

NA. See above.

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“Nope.”

TJW: If yes, how did you hear about this update?

NA.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

What's that work out to per month?

[TJW Additional prompt: Does math and starts to work it out]

“I'm curious to see what I rate among the average. Because I can't really think about, I don't eat seafood every day, but how often do I eat it per month?”

[TJW Additional prompt: Gets calculator out and tell him about 7 ounces per month]

“Oh, that's it? So, they're trying to increase you to 6 ounces a day, so fish with every meal?”

[TJW Additional prompt: Continues to discuss other variables, including what is the acceptable risk for cancer for eating fish and shellfish]

“Zero? [laughs]”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Absolutely, I absolutely do. I mean, we as a family, all of our protein that we take in is either in fish or deer or elk, something that comes from nature. We don't buy meat in the store, period. We don't buy fish in the store. We catch all our own, we harvest all our own, we do raise our own chickens and everything else, but yah, pollutants, that's why I said for me, it's herbicides, because we're constantly dealing with that with deer and elk and everything. We go into the woods, we go to the rivers, we go to the streams thinking we're actually catching the highest quality protein that we can, but the fact of the matter is, these animals are feeding on clearcuts that are being absolutely annihilated with herbicides. The fish are swimming up rivers that are receiving all the runoff of the annihilation of herbicides. And, it just constantly goes on. When I drive into the woods and I come around a corner and see a big sign that says, caution herbicide use next 30 days, it's like, do I want to eat anything out of here? [laughs] For me, it's a big thing I've been a part of, as far as saying earlier that I'm outspoken, I've kinda put myself out there in trying to educate other sportsman on the effects that this is having on our lifestyle, you know. A big issue around here right now is hoof rot elk. There's a big fight between sportsman groups saying hey, we need to look into these herbicides to see if that's a part of the cause, whether that's an immune deficiency or it's a chemical problem directly. And WDFW constantly stands and says, no, no, no, that's not the issue, we're 100% positive. We haven't studied it, but we're 100% positive that's not where the issue's coming from. And this is another, you're saying, industry being in the pocket of government agencies. You wouldn't think a sportman, who would be conservative-based republican would be talking about pollution and environmental issues, but [laughs] as sportsmen, I think the mentality is starting to change to more toward a conservation base and conservation includes management, but at the same time, protecting the environment so that those animals have something to feed on. And that's where we're at right now, we're coming to a head with issues.”

[TJW Additional prompt: Especially as you get all of your meat from the local environment]

“100%, we refuse to buy meat in the store because we don't want chemical laced meat. So, when we go to out to the rivers and streams and it's filled with chemical laced meat, we're in a catch 22 [laughs].”

[TJW Additional prompt: Talks about only knowing a little about the hoof rot from a brief work update]

“I really blew up on this hoof rot thing not too long ago and I actually received a call from a guy who works for NOAA. He studies migratory sea ducks and he, I'm kind of I guess the first I know that's come out and say hey we need to look at the correlation of herbicide use to salmon population decline in 80s and 90s, because that seems like to me, those are both around the same time. And then he called me up on the phone and I talked to him for the longest time and he was noticing a decline in sea duck populations right about the time of herbicide use really started to kick off, so he's like, there's starting to be a pattern here that he's noticing, I should have wrote down his information, but there's starting to be a pattern that he's noticing, you're seeing decline in almost all wildlife across the board right around the time that increase started. So, and it makes perfect sense. If it's sprayed on the ground, the first rain, it's going on the water.”

[TJW Additional prompt: I noticed a sign past your place that says 'owner will maintain,' is that connected to not wanting herbicides]

“Yah, don't spray. We get, I'm especially grumpy about it as this is all [timber company] property and this is coming on 20 25 year old timber, so they're going to be logging that in five to ten years, and when they log it, they will fly over with helicopters and spray it right there. They don't care if they hit your property, they don't care. So, yah, and this is me assuming, but when we first moved to this property when I was a kid, I grew up on this chunk of property, we immediately upon moving here got cattle, we started raising cattle. Well, if we kept... the property was basically fenced the same, we had cows in this field and it was separated for cows in that field. If those cows were allowed to access that field and drink out of that drainage ditch, they died. Dead. If you kept them away from that drainage ditch, 100% fine. We never drew a correlation at the time, because nobody talked about herbicide use. But when moved here, that was a fresh clearcut. So now, I've been here long enough so that it's grown up. It scares me to think that I live off a well and that's going to be my water and there's potential in the next 5 to 10 years that they're going to start a five year program of spraying this every summer. And that's my watershed. And I don't have, other than me assuming, now it doesn't seem to be, my cows drink out of it all the time and it doesn't affect them, but nobody's spraying right now. And that would have been looking 20 years, so that would have been like, early 90s. And that's when herbicide use was really starting to ramp up, take off.”

[TJW Additional prompt: You would hope that they used harsher chemicals then than they do now?]

“Probably, but the main chemical, I know a few guys that are really doing some studying, you're talking about atrozone [sp?], which was an agent in agent orange that they used in Vietnam and that's the main ingredient in most the sprays that the timber industry is using. So, there spraying basically agent orange [laughs]. I mean, for me, that's my big fight right now. We're starting, in the midst of starting a program that's going to kick off in the next month or two, that's going to include podcasts and videos and everything else and herbicide use it going to be one of the main topics we're going to really trying to

delve into, but other investigative reporting and stuff like that. Becoming activists kindof, kind of weird.”

[TJW Additional prompt: Discusses why doing thesis, nexus between this issue and fish and shellfish industry. Discusses also from a rural area]

“Yah, coming from an area like this. Where you come from a metropolitan area and they think, oh factories dumping waste. And you come down to an area like this and all you see is trees and you say, God, it's got to be so pristine and it was! It should be! Except they are literally flying over with helicopters and just plastering the countryside with chemicals and that can't be good. I mean, here's this big fight right now to take all these chemicals out of our food against Monsanto, but at the same time, they're just blasting the countryside with it. It's just, come on. And the timber industry is going to fight that tooth and nail, they're not going to go away from that because that's production there. If you have to go in and physically remove brush by hand?”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

See above.

SPORTS FISHING GUIDE 3

Background

TJW: How long have you been a fishing guide? In addition to running this business?

[omitted to protect anonymity]

TJW: When was your company founded / how long has your guide business been open?

See above and below.

TJW: How do you primarily fish?

“We mostly troll or anchor fish or what what we call side drift for salmon or steelhead. All different types.”

TJW: How/why did you get into the fish guide business?

[omitted to protect anonymity]

TJW: What areas do fish?

“So, we have a fishing lodge in Alaska as well, so we spend time in Alaska, Oregon, and Washington. So, most of the rivers we have fished or have guided on in northern Oregon and most of Washington and parts of Alaska, mainly Bristol Bay area.”

TJW: How much of the time do you spend in Washington?

“For the fishing guide perspective only? Well, we own the business in Alaska and we have a lot of customers, we have about 150 customers in a really really really short time, less than a 30 day window that we run through that business. And here, I spend about 50 days in Washington and one particular area in northern Oregon, which is the mouth of Columbia, so it's kind of the same Washington/Oregon.”

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?

[omitted to protect anonymity]

TJW: Is this a family business?

[omitted to protect anonymity]

TJW: How many sports fishermen do you take out per week?

“We take 144, our periods are 24 guests at a time and we run 6 periods. So from June 15 to July 15th we're operational, we spend about three weeks in setup prior to that and spend about a week in tear down. We're in a real remote area, so everything's complete setup and complete tear down.”

[TJW Additional prompt: And that's for Alaska? And for this area?]

“4 to 6 a day.”

TJW: Who would you say is your typical demographic in regards to your customers?

“Boy, it's kind of all over the board. Corporate stuff where companies send their employees, kinda all over the board. There really is no particular... I've had the same people year after year after year.”

[TJW Additional prompt: So, a lot of repeat customers?]

“All of it is. It's kind of nice cause it's like a reunion, you know. I get to seem them sometimes only once a year, people fly in from out of town.”

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a fishing guide? What would you say is your top priority?

“I mean, on a large scale, I have to believe that our hatchery situation in Puget Sound, which I personally believe it to be water quality, so it's pretty ironic that we're having this conversation. Where our Puget Sound salmon and steelhead are really really struggling, they're making, we know they're making it out of the rivers, they're not making it out of Puget Sound. They're making it to Puget Sound, when they are, they're not getting past Port Townsend. If they get past Port Townsend, they're okay. But for some reason, they're not doing well in Puget Sound. So, yah, I think it's a huge issue. What the cause is, I don't know. I have a hard time it can't be from population. I mean, we cut trees down, we dump sewage in, we dump oil and gas, and every...”

[TJW Additional prompt: Do your issues and concerns vary by state with concerns in Washington being more pollution specific issues?]

“It's something, but what the cause is, but our smolt survival. Our baby salmon and steelhead survival is not great. It's at an extreme low right now. In Puget Sound in particular.”

[TJW Additional prompt: Discusses Salish Sea Marine Survival Study and work that Nisqually is doing in research on survival in marine waters]

“I have a friend that runs the outmigration weir, so the last few years he's runs the smolt trap for the Nisqually. So, firsthand, he gets to see everyday what's going out. They spent some money in radio tag studies, more so than anyone else in Puget Sound.”

[TJW Additional prompt: In terms of in Alaska and Oregon, is this your main concern as well?]

“Our concern in Alaska is just overharvest. The water quality seems to be... although the king salmon seems to be, something's happening with king salmon as well, but we I think underlying, we realize that it's overharvest in other fisheries. And that's an opinion only.”

TJW: What would you say are some of the other kinds of issues that fishing guides in Washington are facing?

“Oh, I'm sure. It's all about... I think that the uneducated, the fishing guide that's not educated will say it's lack of hatchery production. I don't believe that. Well, in some areas maybe. But we dump a lot of hatchery fish in these waters, in the Columbia, Puget Sound, and off our coast. And again, for some reason, the survival rate's just not what it needs to be. I believe that's a huge part of... a huge concern for me. And I think if people understood it, it'd be a huge concern for them as well.”

TJW: Do you know of other fishing guides that have similar issues to yours?

See above.

TJW: What would you say are sports fishermen's major issues and top priorities?

See above.

TJW: Have you been affected and/or how often are you affected by fish advisories?

“Well, no. I think that some of our bodies of water, I mean look at Lake Washington, there was a period in the 50s that they recommended that you didn't even swim in it, it was so contaminated. And I think parts of Puget Sound as well, I think the EPA spent a lot of money in Duwamish and Tacoma and these ports cleaning... I think that habitat has a way of coming back on its own if left. But no, that's not a huge concern at this point.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“No.”

“There's been a little bit of that in the news, I think.”

TJW: If yes, how did you hear about this update?

NA.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

[TJW: Discussing different factors of equation and changing things around]

“Imagine that when there's money involved.”

[TJW: Continues to discuss]

“What are some of the other rates for other states? Heavily polluted states on the east coast?”

[TJW: Discusses 17.5 for some states and 6.5 for others, saying that it varies]

“What is California?”

[TJW: Says that she doesn't know, but that she could look it up]

“What is Alaska?”

“It's interesting to see what would happen to big business when this happens. Does Boeing, because of costs? Does Weyerhaeuser, do they continue to leave the state because it's so tough to do business? It's interesting. Wow. It's a big deal, actually. I wonder what these companies think it's going to cost them to adhere to these new standards if adopted. Probably millions of millions of millions of dollars.”

[TJW Additional prompt: Discusses cost benefit analysis that Ecology released, but stating that she hadn't read through it in entirety. Right now they're saying there wouldn't be any cost]

“Oh, good. I'm not saying it's bad or good, it's tough.”

[TJW Additional prompt: Discusses variances]

“It's amazing, we don't want to ride a bike a block down the street, we want to drive. We want everything to be inexpensive, but yet we want clean water. It's a tough balance.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Oh, I think for sure. I think at some point in time, down the road, it's going to be a huge issue. Look what's happening in California with water right now. We're on the verge of a national catastrophe in that state. Do you pay attention [to that]? It's a big deal, we're on a third year of a severe severe drought, one more year and... And they're using the water out of the ground, taking these big aquifers and they're drying up and they're having no more water, so they're having big sinkholes. Then when it does rain, there's no place for that water to go. Water's going to be a huge problem. Huge problem. In the next 50 years, it's going to get a lot worse. So, no, I think there's a huge need for that.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“I think corporate America is going to be a huge barrier, I mean, they don't want to spend any more money. But I think it's a tough balance. Yah, I think there's huge barriers there. People don't want to spend more money. You ask them if they want higher water quality, they're going to say yes, but are they willing to pay for it? Probably not in most cases.”

[TJW Additional prompt: Asked if he had any additional thoughts]

“No, but I would be interesting in seeing your thesis.”

SPORTS FISHING GUIDE 4

Background

TJW: How long have you been a fishing guide?

[omitted to protect anonymity]

TJW: When was your company founded / how long has your guide business been open?

See above.

TJW: How/why did you get into the fish guide business?

“I grew up with it.”

TJW: What areas do fish? How much of the time do you spend in Washington?

“I fished all over Washington, everywhere in Washington basically. I haven't done a lot of fishing in Eastern Washington. Always in Western Washington. Oregon and Western Washington.”

TJW: Are you (or is the owner) from this area? If not, where are you from and how long have you lived in Washington?

[omitted to protect anonymity]

TJW: Is this a family business?

[omitted to protect anonymity]

TJW: How many sports fishermen do you take out per week?

“Three or four a day, five days a week.”

TJW: Who would you say is your typical demographic in regards to your customers?

“Generally, the people you would fish would be small business owners, taking their customers or employees as a reward. Or I would do a lot of people, political people, and tourists from around the world. So, a cross-section of people, lots of folks from Europe. Not so much anymore, but in the old days.”

TJW: How many people does your advocacy organization represent?

[omitted to protect anonymity]

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a fishing guide? What would you say is your top priority?

“There are a number of priorities, the largest concern, there are a number of concerns. The Department of Fish and Wildlife is running out of money. Their general fund has been taken from 110 million to 58 million and what that means is hatchery production has been greatly reduced, so when you look across the state and you look at the future, we have a population that has doubled in the last twenty-five years and yet our fish populations are going on a downward trend. So, one of the chief causes of that, and I'm sure all the user groups are concerned with it, is the fact that we have all these hatcheries, federal and state hatcheries state-wide, many of them are sitting at 50% production because there's simply not enough money in the operating budget to raise fish. So, the long term concern is number one is the amount of fish that are being raised on a decreasing basis, and then the aging infrastructure of the hatcheries, the hatcheries in this state are very old, they haven't had improvements on them in two decades. And one of the chief causes of disease in hatcheries is the water that they're using in the hatcheries. So, water sources and how it impacts hatchery survival rates is, they're directly tied together.”

TJW: Would you say then that is your top priority?

“I think that's one. That's an enormous priority. And then the other thing is how do we create ways fund this, these hatcheries long-term. Because right now, you're putting your finger in the dike. But there has to be a long term political solution for funding and, as of now, that's not happening.”

TJW: What kind of effect has your organization had in terms of lobbying for or advocating for various environmental regulations, if any?

“Most of our environmental have to do with making sure we have healthy fisheries. If things are impeding that or in the way of that, we're directly involved in it. We do not do a lot of work with the environmental groups because our main specific focus is fish.”

[TJW Additional prompt: Making sure there's enough fish?]

“Enough fish and that we have long-term funding for it.”

TJW: Would you say that your main concerns and priorities vary by which state you are fishing?

NA.

TJW: What would you say are some of the other kinds of issues that fishing guides in Washington are facing?

NA.

TJW: Do you know of other fishing guides that have similar issues to yours?

NA.

TJW: What would you say are sports fishermen's major issues and top priorities?

“There's, and this doesn't deal with the tribes, but one of the problems that the agency faces is that if you look at non-tribal commercial fishermen, especially the non-selective harvesters, they contribute literally nothing to funding the agency. Recreational fishermen contribute about 67 million too, we're the biggest funder of the agency. And non-tribal select harvesters contribute less than half a million. So, they are given, even though they don't fund the agency and bring nothing to the state's economy, they are receiving a large portion of the allocation of fish. And long-term, that will be continue to grow to be a bigger bigger issue. Because you cannot fish non-selectively in the rest of the United States. Oregon, excuse me, Oregon and Washington are the only two states that you can continue to do that. And the only place in Oregon is on the Columbia, because it's co-managed with Washington. Washington is the only, in the lower 48.”

TJW: Have you been affected and/or how often are you affected by fish advisories?

NA. Didn't ask.

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“I am aware of it.”

TJW: If yes, how did you hear about this update?

“Our concern is always about survival and recovery of fish. So, if water quality changes impact that positively, specifically as it applies to hatcheries. Then we're very very supportive of that. The area that we would be most concerned about, because the people that I work for have a science-based board of directors. So, is the outcome of moving toward higher water quality standards, changing fish consumption rates, who is the beneficiary of that and what's the economic impact to each group that's involved in it. And is it, in looking at that, who benefits economically from it the most, who has control, who ultimately will have control of these kinds of decisions, then that would be a concern.”

[TJW Additional prompt: So, that kind of analysis was done when you first heard about this?]

“Well, no, it wasn't done, it continues to be an ongoing concern. We want to make sure that if changes are made, which you think in terms can be positive changes, that number one that fish benefit from it; number two that the citizenry benefits from it, long term from a healthy standard or whatever, and that the burden of all this is shared equally with all user groups.”

[TJW Additional prompt: Over the entire populous, rather than just business owners, is that the interest here?]

“Exact..., well, yah, the corporate world's not very happy about this, as you very well know. So, having not been involved formally in the processes, I don't want to talk about something I'm not educated about. I'd rather talk about a general outlying outcome. And we want to make sure if there are sacrifices to be made, that everybody's making the sacrifices and the burden doesn't fall on one group of people.”

[TJW Additional prompt: Would you say, for the people you represent, they are more interested in the implementation of this?]

“Implementation and outcome. We don't want anybody to come out of this with enormous veto power over anyone, so somebody would say I'm the godfather and you can do this or you can't do this. That would be enormous. That would be something we would be concerned with.”

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

See above.

TJW: Do you agree?

See above.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

NA.

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Well, boy, that's a tough one. Because I'm so narrowly focused on hatcheries.”

[TJW Additional prompt: So you think of water quality in terms of hatcheries?]

“It's incredibly important. It's the huge single biggest problem facing hatcheries facing the state today because of where they get their water.”

[TJW Additional prompt: In terms of water quality for hatcheries, what specifically are you concerned about? Is it temperature?]

“It's varying temperatures, that is another issue, and it's the source of the water itself. Because a lot of times, what's happening is that the water's recycled through hatcheries and then you have the effluent water which goes into abatement ponds and those are all enormous, they create enormous problems long term in the hatcheries. And one of the things that is happening now that you may not be aware of, is that in many hatcheries, the effluent water is actually being flushed into the river and when you flush it into the river and you have fish that are migrating back to the hatchery, they normally take days to get back there, but when you put the effluent water in the hatchery, it's like putting hay in the barn for the horse. Because fish are so sensitive to smell, if you run effluent water from any hatchery in the state, the fish will take a day or two to get from the mouth of the river to the hatchery, they will just go. They hone in, it's like a honing device. It creates enormous problems for the tribes and the other user groups, if they shoot through the system at an unnatural rate, fish don't move through systems that way. When effluent water is released it has a dramatic impact on the rate of ascension back to the hatchery. And nobody like its, no fisherman likes it, it's impacting a natural order of the way things are done. We would like to see the effluent water not go back into the river, period.”

[TJW Additional prompt: So that's probably your main focus, perhaps more focused on that than this water quality standards update that's much more toxics related?]

“Yes.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State? But it sounds like that's not really a focus for you right now?

“It's not a focus for us right now. We're very narrowly focused. I think that we have tried, the people that I work with, we try to work collaboratively with everybody to solve problems that are mutually of concern, so it's, I've been doing this for 40 years, and we're in a period of great change, and the biggest change to, I think, to the tribes and everybody else is the spigot is running dry.”

[TJW Additional prompt: Just in terms of fish?]

“Well, the tribes are having a more difficult time getting money, everybody's having a more difficult time getting money. If you live in New York, you fail to see, we've got

more hatcheries than anybody in the country, so if you're a powerful senator from Chicago, wait a second, you guys have 200 hatcheries, you don't need all that."

[TJW Additional prompt: Discusses worry about Norm Dicks not being in office anymore and not being a 'rainmaker' for the region anymore]

"Well, that's exactly what's going to happen."

TRIBAL SEAFOOD 1

Background

TJW: What kinds of seafood does the tribe specialize in growing, catching, and selling?

"We're a grower, we're also a broker.

[omitted to protect anonymity]

[TJW Additional prompt: Is that due to shellfish being more variable than other tribal run businesses?]

"I think it's regime change, a lot of leadership have always known, at least from an anecdotal point of view, that aquaculture makes a lot of sense. For me personally, I've always looked at the model after Boldt made his decision with the finfish how tribes and ourselves included, got into farming fish. And I was so excited and thought tribes would take, especially an iconic, such cultural item such as shellfish, that I thought immediately after Rafeedie, as naive as I was, Rafeedie made his decision, that tribes would get into aquaculture, but they haven't. Even united shoulder to shoulder lobbying for money and it just hasn't happened. What we've done now, the board of directors has allocated funds for growing the company, we're basically, we produce our mainstay is oysters. Whether it's in meat form or singles, live form. The other item we have are clams, they're all brokered. We buy all the clams from [our] tribal harvesters, so it's all wild resource. Not all, that's not necessarily accurate, they have an enhancement program also. And they're taking a different look and approach to actually, what I like to say, I'm really proud of them, I think making a real attempt at producing real clams versus paper clams."

[TJW Additional prompt: What's real versus paper?]

"Meaning, they throw a lot of money and resource at trying to grow clams, but I don't think the numbers... I don't think they've really been held accountable. And I think they're taking a much more intelligent approach to actually farming. So, I have hopes in the next three years, a tremendous, quite a bump, in our produced clams, which is our department of natural resources at the Tribe. What's nice is that we're consultants, so we contract with them to help them actually produce, and so, that will technically, indirectly, be another item we're actually producing in cooperation with our DNR department. We also have what I call a service side, the other model we have is servicing the Tribal community, meaning we have to be a platform. [Our company] does for Tribal harvesters, whether it's clams or salmon, so if for instance, all the other buyers we compete against, I'll give you a statistic, on average we compete against five fish buyers a year and about five clam

buyers. The last seven years we've averaged about sixty-seven percent or I would say 70% is a good number, we actually get 70% of all of the tribe's production. Competing against with six companies, competing for both those resources. When I took over, I thought it was interesting that some of our Tribal leadership says, [his name], let's use the [other WA tribe] model, let's force everyone to sell to you. I said, I'm not touching that. I want to prove, through our service and our own abilities, that we'll get the majority without anybody being mandated, and that's what we've done. And it's been, I think it's been successful. So, basically when it comes to the salmon that we sell and all of the clams that we, most of the clams we sell, are from our tribal harvesters. So, obviously in an environment like the Tribe, our goal isn't to put a bunch of profit when it comes to brokering those items, it really needs to go to the fishermen, so in theory it does. Once we get our feet on the ground as far as really running with the production side, then I'll look at other ways to add value to the salmon, which is simply sitting down with the casino, figuring out their specs, filleting them, pin boning them to specs and then what'd I'd like to do is take a portion. Right now, the company that we work with, we just buy the fish, sell them for a flat rate, profit's minimal, but we don't have to mess with them, there's no headache. This company's willing to let us skim 10% and have a little what I call love, self identity, where I would literally market these things, make a dollar a pound, versus 8 cents a pound. I would like to take that money and kick back a percentage to all tribal harvesters during Christmas, a bonus, a percentage. So, eventually that's part of our model but it's unfortunately not the priority right now, we need to become better producers. Now, we have a, we finally in the geoduck aquaculture. So, last year, two years ago we planted a pilot crop of a quarter acre, about thirty-three thousand animals. Currently, we're at 86% survival, it's just amazing. Last year, we planted two and a half acres, those numbers have averaged, come in at 66.5% after one year which is very good. This year, the goal is another two and a half acres. We're currently farming, planting ducks right now. Unfortunately, with this extreme heat, we've had to make a lot of executive calls on the beach and hold, no planting, it's just too hot, the animals won't survive. So, I don't know if we're going to achieve our goal this year, but at least it's methodological, at least we're not just feeding, killing the animals. So, I'm excited about that, it's going to have huge potential for the tribe.”

[TJW Additional prompt: Reiterating that they are growing the oysters and geoduck and brokering the salmon and clams from their tribal members]

“That's our current model, as I said, we're getting ready to contract. Our contract isn't formal with our DNR, but they're really looking to figure out how we can help them really produce manila clams, which is really nice, it's just a nice collaboration.”

TJW: Where do you grow your shellfish? Or from where do you buy your shellfish?

“Right now, it's primarily [Tribal growing ground in area]. There's about 60 usable acres. Probably, it breaks up, I can't think of the percentages at this point, but I think roughly, and that would include your shellstock ground, which would be for meats. Geoduck ground, manila growing ground, and then also singles oysters ground, and with our singles what we typically do is we have, currently we're using for a nursery system, a booster seed up when we buy them [unintelligible], it's a primitive system, but it's called the bouncing bucket system and Canada uses them quite extensively, so we researched

that two years ago and started it last year. It's a crude method where you take a bucket, modify it, throw a bunch of seed in there, and you kinda forget about it, six weeks later you go oh my God, it's time to screen out so that we can take these... Once you nurse them out to say a thumbnail size, then you take those and you put those in a grow bag and stake them. We use the bag culture, ground bag culture, system, put them in a bag, stake them down, once they boost, then that situation will broadcast them onto the beach onto [tribal growing ground] and they grown and finish off on the Island. So, we really have extensive plans to expand that part of our department. So, we're also currently... we went to a conference, a shellfish conference in SunRiver last fall and found out that the folks downtown [Puget Sound town], the port was allowing ten permits to put up FLUPSY operations within the boathouses. FLUPSY's acronym stands for floating upwelling system and it's basically a nursery for clams or oysters. So, we use it primarily... that's another collaboration we have with our DNR department, we went through quite the extensive process to purchase, to get permitted, and I won't bore you with those details, but currently we hope to have it operational by September, catch the last six weeks of the growing season. But next year, we hope to produce 3 or 4 million seed a year out of that operation, so that will be our goal next year as we didn't close on the boathouse until the middle of May. So that's currently being, all those pieces of the puzzle are being purchased, folks are working hard to assemble that whole nursery system. So, that will be very useful, and the department of natural resources will be able, they have to purchase millions of clams at a time, they'll have a short hold facility to throw them in there and then as they need them to plant them on the beach. It'll be much more manageable and efficient.”

TJW: How long has the tribe been operating this seafood company? [You mentioned thirty years]. How/why did you get into the seafood industry? [You said that it felt like a natural progression, but there was some resistance to going into aquaculture]

“No, I guess, the way to put it, my great grandfather who passed when he was 95, I was 11, his mantra was 'You ain't Indian unless you like clams and oysters.' I think for me and my family, that sums it up. It's not a function of should we get into it, it's we've also been into it. And although it may have been mother nature, there's always been that appreciation and understanding the value of shellfish. So, I think that kind of an interesting way to ask the question. But to incorporate a business model, a capitalistic approach...”

[TJW Additional prompt: That's a better question for Tribes, perhaps why did you choose to incorporate the way you did?]

“I guess one of the things that Tribal committee has always said, they look outside to our neighbors and said, look at these hearty robust shellfish companies, why are we doing this? And unfortunately, nobody really wanted to step up and say, well, yah, not only should we, but this is how. So really, I would say... I was hired on originally with my experience. I soon realized it wasn't really a priority, the most important thing, you see the model's evolved, initially I was told, we know you can do it, but it takes resources, more than anything what we need you to do is just to make sure we always have a platform for our Tribal fishermen, that was really the focus, not the production side, the

brokerage side. But, at the same time, you need to produce enough so we don't lose money."

[TJW Additional prompt: And to make it profitable]

"Not even profitable, to expect x out of you and move all this product, so the politicians don't get an earful. But we still want you to do just enough on a bandaied budget and a skeleton crew to subsidize it to make it operational so that you don't have to ask us for money. Well I did that and I guess there's some... As a tribal member, that makes me feel good, proud. But as a business man, it's wearing. It's like, there should be more of this. Like I said, leadership, regime change, and they're willing to invest in us, they understand what our plan is, they have the faith in us. The truth is for over 20 years, the chairman and I have been trying to get the tribe to really understand why we should be in geoduck aquaculture and it's finally happened after twenty years. I could bore you to death on all the reasons that's finally happened, but I'm just very glad because right now the numbers look good. I think it's just... we have one of our elders who passed, I loved the way he phrased it, he said you know, [tribal growing ground] going to be the last jewel in the South Sound, and you know, and you'll like this, he says because we have ordinances that there's no development, no housing, there's no septic, there isn't any upland development, we can't even have anything motorized [on the tribal growing ground], and so it really will be that jewel when it at least comes to upland contamination. Now I know we have our neighbors and we have water flowing, but the nice thing about [our growing ground] for the most part, is that it has deep water tributaries, it's cold, it changes well, you don't get into these large bays where you have water that is sed... I can't say it right now... But basically, the word is where it doesn't become stagnant or sedentary."

[TJW Additional prompt: So, not the shallow water where there are temperature concerns?]

"Right, except that's where the best growing areas are. Unfortunately, we have a real predation problem because you can't control the starfish or crabs, the minute you control one crop, just the next army's right behind it. And in a bay, these animals know instinctively not to go in there, because once that tide goes out... So, it's got it's two-edged swords everywhere. But I think it's been a learning curve for us. We've flipped our model a bit, our focus obviously is geoduck and more live oysters, shucked oysters are a little more difficult because the predation issues, with our singles we can put them in a bag and protect them. So, we're always tweaking things, little sort of techniques on how to farm. It's really always been my goal, I wrote some sort of a mission statement when I started about what my theory was was that, like I said about my great grandfather's mantra was, but my feeling is, what I love about farming on the [growing area] is that it's soulful, you get your hands down in that soil, or that substrate, produce all these beautiful little crustaceans and mollusks or whatever you want to call them. It's something that's dense and it's low and it's wet and it's real to me. It's refreshing compared to, and no disrespect, but to gaming and these other things that we do. To me, it's just so important and I hope we never lose it."

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

NA.

TJW: Is this a family business?

NA.

TJW: How do you primarily sell your shellfish? [Prompt] Is it online, retail store, farmer's market, restaurants...?

“Our model for marketing, right now I'll tell you what we currently do. We sell California, we sell New York, we used to do some export. And we will be especially with geoduck. If we had the larger oysters, we'd be exporting. We pretty much, it's all domestic, we deal with mostly American distributors, which are going to be white table cloth. They're going to be in food service. We do direct food service ships. So, one of the advantages we have as a tribal entity is it's pretty easy to get in the door with tribal casino operations, although we're up above price point, but at the end of the day, we sell a lot of casinos. We also have an interesting niche and the niche is we have a another company that distributes all the conveniences stores, the tribal convenience stores, and it's part of our retail plan. Right now, two of our retail operations that we have open have coolers that sell our product. We've sold to [other Puget Sound tribe], they'll buy our product, but we believe that if we really put the effort, we could into the tribal retail distribution, potentially use our tobacco company to distribute, so that's one of our focuses. But I think food service to the casinos is one of our priorities. American distribution. We deal with Asian traders also. What I do like about the Asian consumer is that this just not another commodity to them, this is real. They view these things as aphrodisiacs, they see it as, they value it much differently and are willing to pay the price. So, I know that eventually we'll probably focus on some more Asian distribution, whether it's US Chinatown or international. Definitely the focus of our model for marketing. But right now, it's currently food service and American distribution. Local guys, food services of America, [a local distributor], they really want to grow with us, I know the family well, [unintelligible] America is a distributor out of California, Stockton California, they're really big into their Portuguese decent. I don't know if most folks don't know this, but in the Stockton, Medesta area, the hispanics and the Portuguese, they'll consume medium oysters by the semi load. There isn't enough oysters for them.”

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

“It's still mostly local Washington State. In terms of, I guess, [local distributor] they're going to be in the Northwest Region, not just Washington. So, they're going to be Northwest distribution. [Distributor], I believe is taking most of theirs to California, and then occasionally we'll sell to an Asian trader down in San Jose, which he'll be, most of his business is cash and carry, meaning the folks right there, it really is a melting pot. I've been to a lot of these Asian traders and you would assume it's just the Asians coming to their cash and carry. It's probably more hispanic, Portuguese, black, that whole melting pot, that whole demographic that comes into cash and carry and whether they're buying it for, most of them are buying it for food service in their own little community. You'd be surprised by how much seafood is consumed. I learned all this working for [other

shellfish company] for ten years in sales, I traveled all over. In fact, when I worked for them, they gave me the California region, which was one of their biggest ones. I used to go down, I learned so much, I learned more about how what was happening. They just assumed that because they're all Asian players that were buying their product, they were being consumed in Asian restaurants or Asian retail. Not the case. It doesn't take long to learn, spend a little time. One of our bigger players, [seafood company] when I worked for [other shellfish company], would buy two pallets, I'm talking, I can't even remember the count now, but just shucked meats, the large ones, three oysters in a jar. They didn't know who was eating those, so I took a trip and I would watch while the owner, waiting on him, I would watch these people coming in and I kept seeing these African Americans coming in and sure enough, I asked [the owner] later, who the hell's buying all these large oysters and he was like, yah man! You'd think us Koreans would eat that stuff? No, those are too big."

[TJW Additional prompt: So you think they just fried them up, just curious?]

"I never did go to the soul restaurants, I should have."

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

See above.

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood company and shellfish grower? What would you say is your top priority?

"I'll give you a couple examples that come up every time this time of year. So, you get the warm weather, of course vibrio parahaemolyticus is a concern and then the state has their formula that says after so many illnesses in a growing area, I believe 3, they shut it down. It's becoming a real pain, one of my struggles I have that I try to go, I actually am going to have to deal with this this winter on my own when I have time. We have a growing area on the southwest side of [our tribal property], which is one of our primary growing areas, and it literally is in an area called [name of property]. You look on a map, you see a chart, that's what it's called. Well, just north of that, the next transition inlet is called [another inlet name]. Well, I strategically years ago in our operational plan, in our growing plan, had our manager write [our name of the property], for a reason, because we're the only grower that operates, no one's every been reported ill on our property, but [nearby inlet] gets shut down every year because there's growers, multiple growers, somebody gets sick, they shut it down. But what they decided to do was include [our tribal property], they called. And I'm going to have to push back. They need to prove why they're including [our tribal property]. I believe that I know how to do this diplomatically and somebody is just, somebody doesn't really understand or care but is throwing it in because it's easier. And they don't understand the effect on a small company like us, we only have two growing areas. We call one [name of tribal property], they call it [in the nearby inlet], so we get shut down although there's nobody else operating. Another example that I'm struggling with, so on [other inlet], which is where our main production

comes out of for most items. When [other shellfish company] moved in, they bought the [nearby] property and they have major production going on. Every year, [this inlet] never shut down, when we were the only grower. Other concerns when it comes to geoduck, a lot of folks, geoduck, geoduck, geoduck, the mexican supply, which is a different species, similar but inferior to ours, I was concerned for a while, but I don't think there's reason, they have a biomass down there that's not going to affect the global consumption. But I'm hearing rumor now of other geoduck species out of other countries. I just heard this last week, so I'm kinda curious what that means, if it's real. Often times when I hear rhetoric it's because I know certain players in the industry are tired of everybody trying to get into this. So, sometimes I wonder if it's rhetoric. Like I hear rumors about the best I ever got out of my crop was 5% recovery. Well, if you ran those numbers, you wouldn't be in there. But I know I'm at 86% of my pilot quarter acre and at 66% at my first two and half acres. Now, I'm not out of the woods yet, but that's pretty strong numbers. So, people say 5 to 15%, I just don't quite know what that means.”

[TJW Additional prompt: I didn't even know there was a Mexican variety of geoduck]

“Oh yah, they've been, not producing, but they've been harvesting those natural stocks now, I don't know, for eight years. So, it really hasn't had that dramatic effect. Obviously, you've heard about the concerns with the arsenic.”

TJW: Would you say that other shellfish growers and seafood companies have similar issues? What are some of the other kinds of issues that shellfish growers and seafood companies in Washington are facing?

“Um, I think that the... we're not involved in it, but you've probably heard from folks. Because of the arsenic issue, I think the state is doing a complete overhaul on expectations on health documentations and they've, in some ways I'm glad, it's being shored up and I think it'll be better in the name of consumer protection, I think it'll be better in the name of somewhat control less than legal exporters and growers. I think that they could tighten up some things. So, since we're not in the game yet, although I hear people murmuring and complaining, I'm glad. I think it will be a little bit more... I don't know how efficient it will be, I'll see when we get involved, once we start exporting. So, it's not really a problem for us, but it's something that I definitely keep my eye on.”

[TJW Additional prompt: Discusses how she talked with NWIFC co-worker, who spoke to new testing procedures]

“Well, you probably heard and he's probably told you this, there's no proven science yet, but all indicators show that the farm raised geoduck being tested, there's no trace.”

[TJW Additional prompt: I heard that due to the age and accumulating over time...]

“And they don't know... it's potentially age, it could be the substrate. A lot of things end up settling in the subtidal areas. Obviously intertidally, you have the incline and so, we don't know, you might take a farm raised duck and let it sit for 50 years and test and it still might have [no trace], nobody knows the answer. But in one sense, those are the indicators, but I look forward to be able to if there's the data that can actually say here's the proof or something, it's finite or for sure. It's certainly a nice selling point to an

enterprise board for more money. All of a sudden, you know, the wild stock, which I don't want to put taboo on those because move 400,000 lbs a year as a Tribe, just under [other Puget Sound tribe], so it's very important to our Tribal fishermen and our community. But, it'd be interesting to see. It's just something that validates a bit more what I've been pushing for twenty years, not that I had it planned, but it'd sure be nice if I could say, hey, look at this."

TJW: Have you been affected by shellfish bed closures? If so, how often? You mentioned vibrio?

"That's pretty much it. The other issue is occasionally in [one of their growing areas], you may have heard this from folks out of [nearby inlet], there's red algae blooms that occur. And no, it's not the old wives tale, it's not red tide. But what happens during extreme warmer weather, which I'm surprised we haven't had an issue yet, the oysters look like they're bleeding. The red algae that they consume, when you open them up, they literally almost looks like blood. Obviously it's not aesthetically pleasing, obviously you can eat them and they're fine, but people just won't buy them, the perception. So, we've had to, we don't have the problem too bad, we've had it before, so we've literally had to switch our growing area over to [other growing grounds] because they've begun bleed out this red algae. Another issue, so if that were to occur, we have an extreme year, we haven't had that problem. Well, I don't have an alternative to run over to [other growing grounds], which they consider [nearby inlet]. Again, you can really see the impact that has on us. I know it's a water testing and a temperature issue, but they can argue all day long that they can test the water, it has to be so many samples and it has to be so many degrees, but what happened to the other criteria that if nobody gets sick on your product? But that's unfortunately the heavy arm of the state, the system, I don't know how delicate, I don't know how that's going to turn out."

[TJW Additional prompt: Discusses risk-based plan that Health is testing out right now]

"I hear you, that's exactly what I'm talking about. I completely support the risk-based, because then they could use [our growing grounds] as the guinea pig. You're not going to find any problems with it, I'm convinced of it."

TJW: What would you say are your customers' main concerns and questions regarding your seafood?

"Supply. It's still wide open. Supply. I think that's the main issue. We write very little credits, quality is high, we're a small company, qcc is good. I don't think... time to temperature control, HACCP, that's all a given, just fundamental now."

TJW: [Optional]: What are your views/experiences toward/with state regulation?

Chinese Ban of West Coast Shellfish

TJW: Were you affected by the recent Chinese ban of west coast shellfish that occurred this last winter? You do sell some of your shellfish internationally?

“No yet. Some of the folks we sell to, in particular the folks we sell to in New York, they would export our product. They stopped buying from us because they couldn't sell it. But it didn't stop our sales, because anybody will buy that product. You just have to pick up the phone and sell it, if it's a large live oyster.”

[TJW Additional prompt: Discusses other growers that were selling directly to China]

“It didn't really stop, it didn't really affect anybody, just so you know. Because most people have such limited supply. Instead of selling it all in three months, it might have taken them six. So, at the end of the day, I can't really imagine it affected them all that much. That's my guess.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“I've only heard a little bit about this, I don't know much about it at all.”

TJW: If yes, how did you hear about this update?

NA.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

“And that's all inclusive, all seafood, local seafood? That's interesting, like I said, I haven't even delved into it this much, that makes sense.”

“So, in theory, when the Tribe says that rate goes up, it's obviously cleaner?”

“Just like Oregon, following on our coat tails.”

“So, it's just arbitrary, you go up to 176pounds per consumer average?” [speaking about body weight]. So, I love that it's arbitrary, they're going to allow ten years grace until all the science comes in, the governor's diluting it by increasing it. It's about dilution. That just kills me.”

[TJW Additional prompt: Continues to discuss cancer risk rate]

“Talk about theory after theory after theory. They're trying to make something finite out of theory. $A+B+C$, you're never going to figure out those variables. Too many variables. You can't figure that out. Oh well, anyway.”

[TJW Additional prompt: Continues to explain, talking to governor's proposal and number of toxics that will decrease versus stay the same, special rules, variances]

“I get it's about consumer protection and health, but it smells a little politics and the perception that we're protecting the consumer. I understand tribes, as all folks, you want to be capitalistic, but you have to be smart enough to try keep your environment healthy enough to be capitalistic. It's a two-edge sword. You have companies like [other shellfish company] that have these upland land barons with timber, yet they're the tideland barons also. They have to keep their feet in both arenas, in order to survive, which makes sense. So, by default, whether they like it or not, they're mantra has to be to protect the environment. So, I don't know... talk about a conflict there. The bureaucratic side of it all is a bit irritating to me, because $A+B=C$, to try to figure out what A is or B is or C is, you'll never find the answer. So, that's a little frustrating to me. Personally, I see a lot of that in there. They're doing with so many assumptions and variables. I don't know how you could figure out the answer, but I don't know. The dilution and the manipulation, the proxy and the posturing and of course, protecting of the budgets, protecting the decreasing budgets, I get all that. That's why I like going home and sitting by my campfire and thinking about stories my grandfather told me.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Absolutely.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Well, I think it goes back to the one example I gave you, it's anecdotal and it's based of living on this [area], years of being out there with my grandmother and grandfather and great grandfather, not grandfather, but great grandfather. You know, a lot of testing didn't occur years ago, and so we're all trying to figure out what's safe, but no one tested thirty years ago, forty years ago, and we think we have these problems we're trying to address... It's just, again, it's complicated to me because, just because it shows X amount of levels of X, somebody wants to say that's a big problem. Well, we don't know if it is or it isn't. It's definitely best to be cautious. Of course, we all know that somebody that wants to be, not necessarily a naysayer but to really run with this, whether it justifies their budget or their division or their job or their science or basically what their education is based on... it's not a slam. It's a bit frustrating and even scary to some folks to think that their, I'm not going to take it to this extreme as I'll start sounding like them, but it could affect their livelihood. And so, everybody does need to work together to try to figure out the best balance, that's for damn sure. And that's really my philosophy. I get it because I've been the ignorant fisherman, 'God damn you guys', I've been that, I'm not there anymore, I'm not playing the side of ignorance, but... it's just going to be interesting to see how this thing plays out, that's all. But I'm glad folks are looking at it.”

[TJW Additional prompt: Discusses issues of messaging. Discusses dials and what the spreadsheets actually are saying]

“It is complicated, I understand. I'm glad that some folks like to delve into areas. I'm glad there are checks and balances so that nobody's allowed to just run off to the races.”

“I get it. And I'm glad we're on [our tribal property] on our farm. Nothing's running downhill, that's for sure. It's passing by at a quick rate.”

TRIBAL SEAFOOD 2

Background

TJW: What kinds of seafood does the tribe specialize in growing, catching, and selling?

“The main purpose of this was to market final product and we want to give a better price to the fishers, [our Tribal] fishers primarily, and then to spread out to include other tribal fishers. And then once the program's big enough, to include non-natives as well. It's a marketing program. And we are processing to make fillets or other products, h&g, gutted and gilled, to sell to premium markets. Salmon, other finfish, we will get into some of the other seafood items as we go. We do sell halibut right now, halibut and cod, sorry I didn't include that.”

[omitted to protect anonymity]

[TJW Additional prompt: So, right now, you're focusing on buying fish from tribal members and then selling it on for a better price for them?]

“To buy from the Tribal members at a premium price and then we make that justification by selling the ready product for premium price.”

TJW: Where do you grow your shellfish? Or from where do you buy your shellfish?

See above.

TJW: How long has the tribe been operating this seafood company? How/why did you get into the seafood industry?

[omitted to protect anonymity]

“One of the needs in Indian Country is to find a way to get better money to fishers and divers. This cyclicity of the way some of the tribal members work in these industries, they don't have other jobs, and it makes sense because it's a very hard living, to fish or to hunt or to do other jobs like that. So, we want to give them more for less. We don't subsidize, we really justify high prices. A good example is Chinook. We paid \$3 throughout the season, where now you have a \$1.25 on the Columbia River in the round. So, that's really the focus of this program. It's an economic development program and it turned into a strong social enterprise that just funnels the money back into Indian Country.”

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

NA.

TJW: Is this a family business?

NA.

TJW: How do you primarily sell your shellfish? [Prompt] Is it online, retail store, farmer's market, restaurants...?

"It's pretty much a food service retail. We get some restaurants, we have several casino accounts that we sell to weekly. So, the volume is a bit higher. We don't do internet sales yet, but we hope to get to that point. So, it's a work in progress. But, yah, right now food retail. We don't do wholesale. We really want to optimize that we do everything by hand, processing, and we want to reach out to the community and give them the story of tribal treaty rights and why we want to have programs like this in place."

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

"We, I would say our markets today are mainly in the Northwest, Washington, Oregon, and California. We're going to be able to expand because the biggest issue everybody faces in Indian Country for projects like this are logistics and distribution. So, we've been able to figure that out with some partnerships over the last six months. So, we'll get into Idaho and we'll be able to go across... I mean we have accounts with southwest and other third party distributors that can get us to east coast, if need be. But, we're really trying to grow out and grow according to our size. You don't want to grow too fast and fizzle out because you don't have enough people."

[TJW Additional prompt: And you mentioned wanting to keep the story central to tribal treaty rights?]

"Yah, exactly, it's all about keeping money in Indian Country and the program's supposed to break even, but if you think about the initial thrust of it, 45 to 50% of the program budget goes into buying fish, so that's an immediate economic impact for the fishers, not only for [our Tribe], but 9 or 10 other tribes in the nearby region."

[TJW Additional prompt: You do have other tribes that you buy from right now then?]

"Yah, it is [our tribal] program, but we buy from [other Washington tribe] and give them that premium. It might not be as much as [our tribe], but we try to make sure it's more than the market rate. We feel that if we can actually, as this program and as Indian Country, dictate the prices of the salmon. In the future, since there's the seven billion people to feed, why not, don't gouge people, but definitely you could justify good salaries for your tribal fishers. And non-native fishers. People really take care of the resource, don't overfish, and don't pollute the waters. Those are stories from the northwest that are really powerful."

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

Didn't ask, sells to tribal casinos, which are throughout state.

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood company and shellfish grower? What would you say is your top priority?

“Our top priority... as far as difficulties, we really go for the difficulties of working with the tribal fishers to help them with quality handling and bleeding. Our biggest difficulty is to shore up the quality side of this, to be able to abide by the USDA/FDA guidelines, through HACCP, and also be able to make the case on the boats and have the fishers keep their promise, so to speak. That's one of our biggest, and it's not a problem, it's a hurdle. Together, we're building on that, because the end product, you'll see some of the fillets, can really be damaged, but we try to educate and they understand that the handling, the ice is really important, the bleeding. There's no, as far as resource accessibility or resource, we're not that big, we're not as big as an [larger distributor] or even like a [other Washington tribe]. We try to reach out and reach out and partner with [other tribal companies] just so we share in the resource. There's no reason to make your slice of the pie bigger, make the pie bigger. And it's a young program, so I'm sure we'll figure out some of the issues down the road. The whole thing I like to say is that it's not as competitive as... where you're head to head with a [large distributor] or a [large seafood company] or a long liner as they call them. All due respect to them, they have some great business plans and they've done some great business, this is all about tribal sustainability and telling a story. And some people understand where their resource is coming from when they eat it and they can feel righteous about eating salmon because of how the handling, taking care of the habitat and the waters.”

TJW: Would you say that other shellfish growers and seafood companies have similar issues?

“You know, we're trying to make something a bit different. We want it to be a year round operation where you have accounts that are dedicated to fresh product, we've been able to make the case that there's fresh product in Indian Country year round with some of the runs, with your help, with the Northwest Indian Fisheries Commission. So, I think that some of the bigger processing facilities, I think just accessibility of resource. This year's just been disastrous for the Puget Sound, there have been no returns, they were projected to be high, who knows what the reason are, it goes from anywhere El Nino to potentially Japanese nuclear site, which we were told by some WA SeaGrant specialists that that water flow would never get this far south. I think that as they get bigger and the resource is not getting as big as it needs to get, you'll see more companies face difficulties with finding resource.”

TJW: What are some of the other kinds of issues that shellfish growers and seafood companies in Washington are facing?

See above.

TJW: Have you been affected by shellfish bed closures? If so, how often?

“[Tribal shellfish employee] and their program have been affected by those a couple times this year. Heavy rains, they try to adjust and try to get their oyster growing beds further out in the water, deeper, so that it's not as much of an issue. They've done a great job at [local inlet], the water quality's improved, tenfold from what I understand. But what are you going to do when the temperature is 90 degrees plus, don't eat oysters in the summer.”

TJW: What would you say are your customers' main concerns and questions regarding your seafood?

“Well, one is, people are more educated about the food, they're really worried about farm raised versus wild. That's one of our go-to's. Everything that you see that goes through this plant is gonna be a wild salmon, at least. We farm raise oysters, but that's a whole different thing, you're not out there feeding them chemically-induced biotoxins. So, one would be that, the farm raised versus the wild. Another question specifically for us, is a fresh frozen wild as a fresh farm. Because you can get fresh farmed year round. And we're starting to see that people understand that you can slack or thaw a fresh frozen Chinook and it's going to be 100 times tastier and better for you than fresh farm raised salmon. That's another thing. And it's just step by step, those are a couple of the concerns. But sustainability as well. Are we going to see this thing come back in four years? [Our Tribe] closed the river two weeks ago, it's hard when the fish[ers] just want to go out, but that again, is why this program's so fun. You got to sit with the fishers and kind of, maybe it's a little counseling, fishers will be fishers, they get a little upset, they like to fish, but you know what, we pay more for less. And as we go down the road, the whole tribal outlook is the seven generation outlook, so we really want to see that the seven generations are going to be able to fish as you do. [Other Washington Tribe], they don't fish Chinook. [Another Washington Tribe] hasn't fished Chinook in 8 years, 10 years or something like that. And Columbia River tribes won a \$1 billion dollar settlement, Bonneville dam, not a penny of it went into the tribes, it all went into the Columbia River. Those stories don't get heard. They're starting to get heard through programs like this, through [other tribal companies]. And that's what it's about. It's about giving back, it's about taking care of the resource. It's about being good stewards of the land and water.”

TJW: [Optional]: What are your views/experiences toward/with state regulation?

NA.

Chinese Ban of West Coast Shellfish

TJW: Were you affected by the recent Chinese ban of west coast shellfish that occurred this last winter? You don't ship internally though, do you?

“That's what Councilman would be excellent [to talk to], geoduck sales really plummeted.”

[TJW Additional prompt: But you don't ship the geoduck from here?]

“No, the boat owners directly have that access. With the inter-tribal ag, we have an opportunity to open up new markets, potentially to get some premium pricing, that's what this program is about. So, if we can find that and get the divers an extra one or two or five or 10 dollars a pound, then it would come through here, so that makes sense. But today, no, we haven't sold much geoduck.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“Most of my knowledge came firsthand from Councilman [name] that serves on the tribal side of the committee that's trying to up the fish consumption rate. I am not going to lie to you, I don't know much about the water quality standards and where they lie or which rivers are taking the readings from, but we do know from the [nearby river], the quality standards have been excellent. And I think that's really where Councilman [name] and a few other tribal leaders have been, look, we've been advocating that having more salmon is not going to be detrimental to the diets of the people of Washington, similar to Oregon. You know, [person] of the Umatilla tribe did an excellent job of advocating of increasing the fish consumption rate down there. I still don't understand how that all works.”

TJW: If yes, how did you hear about this update?

See above.

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

See above.

TJW: Do you agree?

NA.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

“That's where it comes down, it's all about the all mighty dollar.”

“And understanding that was what [Tribal leader] was saying as well. And you can understand the business side of it, they want to push out as much as they can so they can... I've been on the business side of things for ten years, so but you know, come on. At the end of the day, do what you got to do to not put pollutants back in the water. Vancouver still hasn't put in a waste recycling plant yet and they just puke out a bunch of, just anything that comes through. And we're sitting here trying to do the right thing.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“Well, I think people, you know, this year has been hard because we're not sure what has affected the runs, but I think this is a powerful story to those industry people. It will say, you know what... this is something I'll credit and what a great woman, she was from a Minnesota tribe, with the Green Party, Winona LaDuke. She gave me kind of the concept, but she's like I love driving in a car, I love burning that fuel, I had my twenty years and I flew all over the world and this and that. But really, what she was trying to point out and I kinda sense it as well, is this little blip of our timeline over the course of the history of the world. And I'm not trying to be all tree hugging or whatever, but if you really take a step back and really think of a seven generation aspect of it or even what's going to happen a 1000 years down the road, if you have any sense of responsibility, you would really think about taking steps to stop what you can do now. And we can't really touch the one percent of the world, or at least the [one percent of] America that owns 99% of the wealth, we're not there, we're not going to do it. But little things can really get us to that point and this is one of them, why can't you allow people to see their resource come back and take care of it. You're making enough money, you know what I'm saying. It's been about 100 years since oil's been in, since the late 1890s, we're talking what, 125 years. Alright, you made your money. Now start giving back, pay it back, and let's get the water where it needs to be. Acidification is out of the roof and this is your field, it's got to hurt, it hurts me and I don't know much about it. I have divers going into the Puget Sound and all they see are skeletons of starfish and they're like, we don't know what's going on, so we don't know if this is a cyclical thing or if this it. You got Mt. St. Helens going off, you have a Japanese volcano that just went off a couple hours ago, figure it out. And maybe it starts in Washington, make a statement here. Inslee's an awesome dude and I think he'll make the right move. I'm sorry, I don't want to grandstand, but it stings. My wife's in an MPA program for Evergreen and these topics come back and you hear some of the responses and it's tough, you got to make some tough decisions. You can really deal with less, but if there's no more salmon...”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Well, yah, succinctly for that, it would be just the lobbying dollar, but I think doing the right thing would trump that. I mean, we're supporting the bombing in Syria right now because it's the right thing to do, even though we knew, or a lot of people knew that this was going to happen three years ago. I think that the almighty dollar in this case might lose out, so it's going to be a tough arm wrestling match, but that would be the only big hurdle. As industry's just got to take a step back, take your medicine, and take it now because it's going to change things going forward. Solar cars would be really great, hydrogen technology exists. Believe it or not, oil's not going to be around, that's a 100 year thing. Man you did great within that 100 year, we all loved it, but it's time to move on and think of something better.”

TRIBAL SEAFOOD 3

Background

TJW: What kinds of seafood does the tribe specialize in growing, catching, and selling?

“Well, right now, it’s wild geoduck. That’s 99% of the company’s income. Um, we also sell some of the tribe’s, market a little bit of the tribe’s clams and salmon. We don’t make a whole lot of money off that, it’s just so tribes have a market for their product.

[omitted to protect anonymity]

Basically oysters, clams, and starting small in geoduck culture if the tribe chooses to do that. I think the oyster clam thing is a no brainer, but the geoduck is a little controversial yet and they’re still thinking through it.”

[TJW Additional prompt: So, right now, all wild?]

“All wild, but we’re moving toward cultured. We call it cultured because farm is just a bad, in tribal community, it’s just a bad word. It goes back to farmed salmon, so people hear farmed, negative. So, we say enhanced or cultured. It’s a better sell.”

[TJW Additional prompt: And perhaps more accurate as with farmed salmon, you’re providing additives, while with oysters, you’re just planting seeds]

“Yah, it’s comparing apples and oranges.”

TJW: Where do you grow your shellfish? Or from where do you buy your shellfish?

“In the immediate area [local town], a few areas in Hood Canal, but basically it’s local. The culture will be based locally too, that makes more sense.”

TJW: How long has the tribe been operating this seafood company? How/why did you decide to incorporate in this way?

[omitted to protect anonymity]

“Basically to market the geoduck product. [Our tribe] is unique in where it’s a tribally regulated fishery. So, it’s the tribe’s. The tribe hires contract divers who are tribal members. We pay them a percentage and then we get the balance. I think that’s pretty unique of all the tribes, most tribes have IFQs, individual fisherman quotas where they assign each fisherman a quota and they go out. We don’t. We have contractors, we provide the equipment, boats, the whole bit, so it’s a program. The advantages of that is we harvest about 480,000 pounds a year. That’s about 20% of the treaty share, so it gives us leverage in the market. We harvest year round consistently. We have five buyers, we have a program where we have five buyers that we work with. They are required to put a \$40,000 cash deposit down as a security in case they bomb out and leave us holding the bag, we’re covered. And then we require them to pre-pay before they can order, before they’re invoiced, so that we’re covered. That’s good for the, that’s a no-risk deal for the tribe, it’s good for the companies because as long as they fulfill their obligations, they have to buy every week, they have to buy what they order, they have to pay on time. The advantage to them is that they get a steady supply year round. So they can develop their relationships with their customers and we can consistently keep a higher price. This year, we were a dollar to a dollar fifty higher than all other markets. They were buying from other tribes and the state, and we were consistently higher. Took some convincing, both

the divers and the seafood board. So, what that means then is that the price is 12 bucks one week, a guy comes flying in from somewhere and says I'll give you 20. You don't go, you don't go, because that guy might want one order for whatever and then he's gone and you've screwed over your steady buyers who will be there. Because he not going to always be there. So, it makes sense and it's worked. So, the company, all profit, net profit, except for \$50,000, goes to the tribe. And they use that for elder programs. Distribution and elder programs, stuff like that. One of the things we got to address as we move into these new areas, is that since the tribe takes all of our profit, which is like \$1.5 million a year, they need to come up with some funding for us to expand. So, that's the discussions we're in now."

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

NA.

TJW: Is this a family business?

NA.

TJW: How do you primarily sell your shellfish? [Prompt] Is it online, retail store, farmer's market, restaurants...?

"It's what we call third party on the geoduck. The tribe likes the program, they like the no risk part of getting their money. We have been questioned why we don't sell direct to the international markets. We go through a distributor. Basically what we do is we harvest it, pack it, and send it to the freight forwarded at Seatac, and then [slaps hands], they take care of it. We got our money, we're done. We get the market price for that week, plus a \$1.30 packing for the company. The reason we don't is because there's more risk, you don't get your money up front, you have to work on letters of credit, you have to have a distribution point in Hong Kong, Shanghai, Hanoi, wherever you're sending it and it goes to multiple areas depending on the market, the conditions. Essentially to be successful, you have to have somebody there. You can't depend on a freight forwarder on the other end. You have to have somebody from the company there to make sure it's getting to who it needs to get to. Too much risk, too much expense. We've been advised from other shellfish growers who are culturing their geoduck. About the only one that does that is [other shellfish company], but they're big, they're world-wide and they have their own distribution centers in Hong Kong, so they can do it. But the other smaller growers are saying, just go third party, it's not worth it. That's why."

TJW: What or whom would you say is your biggest market? [Prompt] Would you say mainly China or the far east?

"Yah, 99%."

[TJW Additional prompt: And that includes the small amount of oysters and clams you do as well?]

“No, the oysters, we don’t have any oysters yet, we have to grow those. The bit of wild product we get, until we get our plant, we’re just turning over to a third party who buys our geoduck. Again, that’s just providing a market to tribal members right now. When we get the plant, we can start packing and sorting them, developing our own stuff, once we get that going. Right now, we’re trying to, we’re buying clams, being aggressive just so that we can start developing those sources now. We want to be there every time, consistent. And plus we’re going to start looking at other tribes as resources too, buying from them.”

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

NA. See above.

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood company and shellfish grower? What would you say is your top priority?

“Right now, the main concern is that I don't have enough product, you know. It's in demand, we're, I think our program's kindof unique where we have multiple buyers over the year. So, we have five. We can't go much higher than that because we can't provide the product. We've got six, seven, eight buyers that want in. And from all over, Beijing, Hong Kong, Chicago, Florida, New York, all over. So, that's the real big problem. The other thing is the arsenic thing concerned us a little bit, but I think that's under control. Really, it's how to get more money out of these animals, is really what we're looking at. Because it's 99% a live clam business, you know. We're looking at other, we've got a couple issues with five to six percent of your clams will come up broken during the harvest, you know about that, you can't sell them, you can't dump them. So, what do we do with them? There's really no market for them, we've got small spot markets here and there that will take them. We think we got somebody in Beijing that will take them, but we have to give them some test sample shipments. The probably is that you get the ones that are smashed and then you get the ones that are just broke that won't die right away, but they're going to die. You got to figure out how to ship them separate, you don't want to do separate, but you want to ship them in the same box, but you can't have the ones that are dying pollute the others, so we're working on some packing issues on that. Trying to get that resolved.”

[TJW Additional prompt: Is appearance an issue as well?]

“Not with the brokes. Oh appearance is a whole other thing. We can talk about that. But these are just, we get about 6% a year, that's 35,000 pounds that we're getting brokes, that's money, you can't do anything with them. Basically what we're doing is giving them to elders, doing distribution. We're grinding them, we're fiddling around with a fritter market, which some folks from Beijing say they might be interested. And I think a big one's going to be chowder. We've done a few shows and it's gone like [snaps]. But we'll get into more of that once we get the plant, there's little we can do right now. So anyways, those are some of the ideas.”

TJW: Would you say that other shellfish growers and seafood companies have similar issues?

“Well some, I've asked others and some of them sell their brokes. And that is because some people develop a long relationship with and probably have a like a deal in selling them. Two other areas that we've looked is selling domestically more because we can get them there, so we can clean them, vacuum seal them, freeze them, whatever they want, get it there. The other one we had we were contacted by a Chinese guy who lived in France and he had a distribution to all the Chinese restaurants and he was interested in frozen product to distribute there. We were in negotiations with him and we were talking about price and we were going to do some test shipments, but as naive as we were when we did that, we didn't check what the European regs are and they don't allow anything. No fresh, frozen, no shellfish because of the spat they had 9 years. Did you ever hear anything about that? So, we've engaged our lawyers and consultant folks, who's our representative? Kilmer. Saying, what can we do here? They just come back and say we're looking into it, it's really hard. Unfortunately, that could be... and he was interested in other products too, that would be nice.”

TJW: What are some of the other kinds of issues that shellfish growers and seafood companies in Washington are facing?

See above.

TJW: Have you been affected by shellfish bed closures? If so, how often?

“It can be, PSP is a big one.”

[TJW Additional prompt: But vibrio doesn't really affect geoduck?]

“It's the only thing where biotoxin collect in the geoducks is the gut. Only place.”

[TJW Additional prompt: The PSP?]

“Anything. Arsenic and even... gut and skin. The only places. The mussel and the flesh is always clean. But PSP can be a killer, we were shut down once for 9 months. In the past.”

[TJW Additional prompt: How does that work, how often do you have to test for PSP?]

“Every week. We do it every week.”

[TJW Additional prompt: And how often do you get shut down?]

“Just depends. Just depends on the area. Some areas never shut down, some are more susceptible like [local pass] here is an area that is up and down. One week no trace, next week 500. So, we don't know why and what that's caused is the inability to get on those beds and harvest the geoducks, they're huge. Huge geoducks sell for anything, anywhere. 'Cause you got to remember, it's by the piece, they're sold not by the pound or by the [unintelligible], they're sold by the clam and they're very expensive. And the optimum weight is 1.5 to 2.2 pounds, that's what they want. 3 pounds and above are really tough. That's why we were really interested in that European thing 'cause he was going to look

at slicing them and shipping them frozen. That way we could get in there and get them out. Otherwise, there's nowhere for them to go.”

TJW: What would you say are your customers’ main concerns and questions regarding your seafood?

“Price. Always price.”

[omitted to protect anonymity]

“Other big thing too is that they've cracked down in China on corruption and collecting taxes and stuff. This new president they got said no more of this foolishness and so, the way business was done there is that they... banquets and parties and stuff where the government officials and businessmen make deals, give them their payoffs and their bribes and all that. And big lavish parties and wanted to have the bigger parties. You know, that's the way it works. And geoduck was a big part of, I mean it's a big status thing in China to serve geoduck at these things. Well, they started cracking down on, the government said you can only spend x on parties any more. They started cracking down on officials taking bribes and letting shipments through without paying the tax, stuff like that. So demand went down, price went down. So, we were having to battle that. The market's adjusted now. I don't know what they are doing to adjust it, but price is on the rise again a little bit. That's been a major thing for them, especially early in the year, they were really screaming on the price. And it depressed it for a while. We were still able to keep it higher because we just refused to go too low. But basically, it got so bad that they were coming here and complaining. They're all in Seattle, based in Seattle or Vancouver and I finally told them, I say hey, price is the price. I said, we're dictated by the board and our guidelines. If you want to influence that, don't buy. But I said, coming in here bitching at me ain't gonna make it any better. So, I just said, don't buy. So we had one week where they didn't buy, they didn't order, I told them that's how you tell our board that you're serious. Because you come in here and bitch and complain, but then you buy. Anyway, so, you know, you got to... So, that's helped. We had to do a little selling to our board on the program. They wanted more flexibility. We encouraged them to stay with the program and now it's paying off. We're at almost 15 bucks. Everybody's happy and, right now, it's going good. So, price is the biggest one. Quality. Essentially weight right now the way the market is, number 4s. I don't know what they're doing with them. We can't sell them individually. We don't sort, we do ocean run. So, everybody gets the same break on all the quality. I think they're taking the pack out and I think they take it back to their plant and break it down and sort them out their selves into what they do, but we don't do that.”

[TJW Additional prompt: So you don't sort by size?]

“Nope. It's what they call ocean run. Have you heard of that? Ocean run is that's it pack and everyone gets the same amount, 1s, 2s, 3s, and 4s, throughout the five shipments.”

[TJW Additional prompt: I'm not familiar with that, is that by weight?]

“No, 1s is the color. 1 is the best, 2... We have very few 1s. Ours are mostly in the 2s, the 3s range.”

[TJW Additional prompt: And is there a standard way that they are ranked?]

“A little darker, a little bigger. They call them A, B, C and Ds. The American way, the Chinese are with the alphabet. So, that. Packing. We have issues sometimes with the way it's packed. That's the lesser thing. When it gets there, what kind of shape's it in. You got to pack them right, your ice has got to be super hard cold. Ultimately, what you like to do is your gel packs. And this is what we'll have with our new plant. Ice has really been an issue in this transition because we don't have any storage. The ice that you use, you want it in deep freeze for like three months so that they're super hard, so that they last throughout the process. Um, next on that list I guess would be shipping, cargo plane space. We have issues come the cherry season. Cherries in Washington get the priority for cargo plane freight. So, it's tough that time of year. Generally depending on the price, we'll dial back the harvest a bit until that eases. Scheduling, changing the flights by the freight forwarders. We had an issue this year where they only went to one flight on Thursdays and it's early, so it's impossible for us to get there. I mean, an hour and 45 minutes can make all the difference in getting from year to the airport. So, they moved it up so that we couldn't harvest on Thursdays, which made us have to harvest on the weekend. Including Sunday when football season started and that was hard, nobody wants to work on Sundays. I've never seen a football team take over a state like this, never in my life, and I've been thirty years, never in my life have I seen anything like it. It's crazy.”

Chinese Ban of West Coast Shellfish

TJW: Were you affected by the recent Chinese ban of west coast shellfish that occurred this last winter?

“For a while. It was a unique thing. I've been involved in this business kinda on the outside looking in for years, but this is the first time I've been in the business directly. So, two weeks after I started this job, the ban came. So, I'm going, what the heck, what do we do? And it was unique, it had never happened before in the industry, so no one really knew what to do. Buyers were insisting that we continue to sell because you've probably heard, overseas they've got their ways of getting into the country without paying tax and smuggle and all this. That was a concern to us, we didn't want to piss off the Chinese government, so we were really getting pressure from a lot of them, they wanted product. So, what are we going to do, we started mulling it over. And then the state started selling and we go, heck with that. So what we did is we made all of distributors sign an affidavit saying they would not be shipping to mainland China, blah, blah, blah. Did that, started selling. So, we were down about two weeks. The one problem with that is they weren't buying as much. Cause the risk was higher for them, so they weren't buying as much. So, I think that they were basically maintaining their end of the business. So, a lot of it starting flying through Hanoi. Now, the state of Washington never quit issuing permits, health certificates, they never did. Who quit was the feds. You're required to get a NOAA cert if it's going to mainland China. You can fly it to Hanoi, to Hong Kong without a NOAA cert but if they were to take it to the mainland, then they needed a NOAA cert and NOAA was not going to issue one until they were square with the Chinese. So, then we started the, the whole arsenic thing started, and actually it got resolved in seven months which is fast. That's... in dealing with China, that's lightening fast. Everybody that's

complaining, it's taking so long, it's taking so long, you know the trade reps from NOAA from commerce were telling us, hey be patient, these things take time. So, I think they did a pretty good job in turning it around."

[TJW Additional prompt: I'm told that there are new procedures in place]

"There's a protocol now. All of our tracks have been tested and are clear. So, um, that's a thing of the past. I think it worked out really good myself. Other folks with debate. Shellfish growers are fiercely independent types and want answers right now, don't trust the government too much. Do you get that kind of feeling? You know how they are. They were that way with this, but that probably helped too."

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

"Basically, just from talking to folks and reading about it. It's not acceptable."

TJW: If yes, how did you hear about this update?

[omitted to protect anonymity]

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

See above.

TJW: Do you agree?

"Well, I think it's needed, it's just ridiculous. Um, the question is how do you get to that and it's politics. When I was at the [inter-tribal organization], I was extremely critical of our approach to it, I thought it was wrong. It's basically too much on the [organization] and tribes were not engaged enough and tribes weren't putting bucks into it. In my view, it makes it more difficult to sell and the [organization] just as a scapegoat, you know what I mean? We're not hearing this from tribes. Our tribe, for instance, wasn't as engaged as I thought, so I was super critical of that. So, I tried to tell the committee and stuff, you got to get past the staff, you got to get past the biologists, you got to get to these tribal councils. Number one, are they committed to it and number two, are they going to pay for it? Kay. Until that happens, I don't think there's a chance it's going to happen. And the difficulty with that is that you got tribes who are really into economic development, you got others that don't depend on... we got gaming, we got a construction company, we move dirt around, we push dirt around for other people, we're making money off of that. There's a conflict within tribal country that hasn't been addressed. And since I left, I doubt if it has. I was frustrated because it seemed like [what I was saying] had just fell on deaf ears and I got tired of arguing with white biologists about whether it was the right approach."

[TJW Additional prompt: And what do you think would be the right approach? You mentioned...]

“It's a political process. Technically it's done. There's no more to do. Tribes have to stand their ground. Get a coalition built. Start paying politicians and get it done. It's a long term deal, Boeing is very powerful and it's obvious where the governor is on this. As he gets closer to his election, tribes have got to start flexing muscle and say, do this. Don't hang on the feds, we're doing too much of that. I was an advisory thing, it wasn't my thing, I wasn't involved in it. I was just putting in my two cents and I got tired of getting criticized for it.”

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue? TJW provides recent update of press conference and draft rule.

“That's more reasonable” [in reference to the 175]

“Yah, see, until you get into a process where you get business in the room, it ain't gonna happen.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

Yes. See above.

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Politics.”

[TJW Additional prompt: And you mentioned that business needs to be in the room with the tribes?]

“They need to be in the room. It needs to be a collaborative thing. And that takes leadership from the politicians and that ain't happening, obviously.”

“That's a frustrating thing that, frustrating.”

“Yah, I again, it's politics. I think that's how tribes need to organize, be behind it. That's the money.”

TRIBAL SEAFOOD 4

Background

TJW: What kinds of seafood does the tribe specialize in growing, catching, and selling?

“We mostly do salmon, from the salmon we also take the eggs out of the fish and create caviar for export. And we also do a little bit of crab.”

TJW: Where do you grow your shellfish? Or from where do you buy your fish?

“It comes from anywhere from Alaska to Oregon.”

[TJW Additional prompt: So, it's more than just this tribe?]

“It's more than this tribe. We work with a lot of first nations and bands in Canada and non-tribal fishermen in Alaska. Probably 99% of the fish we buy is tribal, but there are non-tribal fishermen too.”

[TJW Additional prompt: Where would you say the majority of your fish come from?]

“I'd have to say the majority is probably is not from this area, because fisheries in Canada and Alaska are stronger. Probably 15 to 20% from this area, from northern Puget Sound area. Because we get a lot of fish from Hood Canal, a good percentage comes from Hood Canal. At least half comes from Washington.”

TJW: How long has the tribe been operating this seafood company? How/why did you get into the seafood industry?

[omitted to protect anonymity]

TJW: How long have you lived in this area? Is your family from this area? If not, where are you from and how long have you lived here?

NA.

TJW: Is this a family business?

NA

TJW: How do you primarily sell your shellfish? [Prompt] Is it online, retail store, farmer's market, restaurants...?

“Primarily through brokers or wholesalers. And then they sell out to somebody else. And most of it, probably 70% of it, is exported. Around the world, international. Mostly Asia, Japan, Europe are our main markets, but we also have sold into South Africa, South America. Pretty much all over the world.”

[TJW Additional prompt: So, 70% internationally and 30% in the US?]

“Right, and we're kindof in of... we've had a management change, so we're sortof changing the business model a little bit. We're trying to direct market more directly to the retailers, try to increase our profit margins that way.”

[TJW Additional prompt: So, take out the middle man?]

“Take out the middle man, give the retailer savings, increase our margins, kindof a win-win. So we are doing that, to a small extend now, but it's the types of volumes we do through here, it's hard, it takes a while to build up that well, so we have kindof a mixture of selling to wholesalers, brokers still, but the same time, kindof moving some of our inventory to retailers.”

[TJW Additional prompt: And with the retailers, are you focusing more on the US or internationally?]

“Mostly in the US.”

TJW: What or whom would you say is your biggest market? [Prompt] Would you say WA, national, international?

NA. See above.

TJW: If in Washington, to which county or counties do you sell the majority of your seafood?

NA. See above.

Broader Seafood Landscape

TJW: What are some of the major issues you are dealing with as a seafood company and shellfish grower? What would you say is your top priority?

“Issues that we're dealing with... Well, we focus on food safety and traceability, that's huge. We just got certified by BRC, the British Retail Consortium, which is the world's largest organization for certifying companies that handle food. And so, it's a big deal in the markets that you eventually sell to. They want to know, is your plant safe, does it have food safety controls and standards in place, how you operate. Traceability, if something's wrong, they want to be able to trace the food back to the source. So, we spent a lot of time this year just kindof developing that part of the business. And we've been kindof going through a reorganization, trying to beef up the controls and the accounting processes, that's kindof the biggest challenges we're dealing with right now. And then it's, as far as the markets go, it's just trying to find good sources that want a large amount of product. We are actually finding some really good sources, we haven't got contracts with them yet, but we're working on that. It turns out that if we get a contract with the supplier and distributor, our bigger problem is finding the source to fill that, it's a good problem. And that is a huge step in our business model change of going directly to the retail market, if that happens, it will be huge.”

TJW: Would you say that other shellfish growers and seafood companies have similar issues?

“I think probably that's always going to be one of the biggest issues in the food business is food safety, how to handle the product, the cleanliness of your plant, all that stuff. And then in the fishing business, there's the issue of nature. I mean this year we were expecting to have one of the largest sockeye runs in the history of the [large river] which is in Canada. Of course the run happened, but it didn't come through the US. There was a diversion rate around [local island] because of warm water, which I guess pushes the fish further north so their migratory patterns start further north, they migrate southeasterly directions, so they don't hit [local island], which splits the run. They hit above [local island] and then come down. It also delays the timing, because I guess they starting further north and they have further to travel. It ends up delaying the run. So, because they didn't come through US waters, we didn't get as much fish as we expected. There were also some timing issues with different runs that go up the [large river] because the targeted late summer run and the earlier summer runs were still coming in so they couldn't have as many openings because they wanted to protect those other runs. So, they didn't catch as much of the targeted run as they wanted, so that did [didn't?] drive down

prices down as much as everybody thought that it would. So that kind of thing affected everybody. Pricing is something that all the companies are concerned about because you can only sell it for so much to the end user. It all starts kind of at the grounds price you pay the fisherman. So, this company has kind of a unique position being tribally owned. We have a mixed mission. Give the fisherman good prices, but still be profitable. So, it's kinda different from other companies where they're going to try to push the price to the fishermen down as much as they can. At the same time, they have to attract the fish from the fishermen, so you have this balance. But we want to try to give the fishermen a little bit more money, at the same time, you got to keep it at the level where you're still going to make money when you sell it on the other end. So, it's quite a challenge."

TJW: What are some of the other kinds of issues that shellfish growers and seafood companies in Washington are facing?

See above.

TJW: Have you been affected by shellfish bed closures? If so, how often? Or fish advisories?

"Mostly it's just the number of fish because it's heavily regulated by how much fish they need to spawn. Run size, as soon as they kinda feel like they get their escapement goals, they'll open it. You never know what the run size is going to be, you can project it. They do a pretty good job projecting it most of the time. Sometimes the fish don't show up or for some reason something happened, there's not as much returning as they expected or in 2010, it was the opposite. They were expecting a small run and they got this monster 100 year event. That's why this year, sockeye run on a four year cycle, so they expected this year to be so year. And it was, it was a good run, but the diversion rate. A lot of factors, you never know."

TJW: What would you say are your customers' main concerns and questions regarding your seafood?

"It's quality. We have to grade the fish based on meat color and skin color and does the fish, you know, have cuts in it. Temperature of the fish when we receive it, if it's been sitting in warm water too long, it starts to turn bad on you. So, depending on the species of fish, some of the fish have good meat color, call them GMC, and pale meat color. So, there's different markets for that. Generally, it's aesthetics. When you have a fresh product out there and the consumer sees it, it has to look pleasing to them or they're not going to buy. So you put those types of products in different forms. Like we sell it fresh or frozen, fillets, with portions we can also put fish in the cans, some of the fish that is less desirable on the fresh market, we can put into cans."

[TJW Additional prompt: Do you can here?]

"Yes."

[TJW Additional prompt: How much of your product do you sell in fillets or frozen, fresh versus canned?]

“Probably three quarters of is the fresh, that's where you get your best price is on the fresh markets. And then it starts to work down. Try to start there until those markets sortof get flooded and then as the price drops there, you start putting it in other forms. So, I guess after quality, it would be concerns about price.”

Chinese Ban of West Coast Shellfish

TJW: Were you affected by the recent Chinese ban of west coast shellfish that occurred this last winter?

“I know our fishermen were with the geoducks. Of course, they had the price drop and they had no markets. But we don't really buy that kind of stuff here. One of the issues, of course, is the allergens. Any shellfish and finfish have to be kept separate, so you can't really, we buy crab here, but it's right at the front of the plant, kept separate from all the fish. We can't really process crab or cook it or do all that stuff because we don't have a place. It would have to be a separate building.”

[TJW Additional prompt: So, you just have a live market?]

“Yah, we just sell everything live. If we were going to, we're starting to check into the process, but we wouldn't do it here. We would have to send it out to be cooked. So, that's additional cost to get a factory.”

Water Quality Standards and Fish Consumption Rate Awareness and Perception

TJW: Do you know about the current proposed changes to Washington's Water Quality Standards and human health criteria, including the update to the fish consumption rate?

“Well, I do know about it, I've heard about it, [omitted to protect anonymity]. It sounds like an adverse. Part of it is an adverse change, but if they increase the consumption rate, that would be a good thing. I know it's tied to how much pollution industries can dump and it sounds to me like, that the consumption rate is driven by industry, because it's so low right now, what is it, 6 grams or something like that? That's such a ridiculously low amount for a region that has such high fish populations and people that eat fish, because it's pretty big around here. And to have the lowest consumption rate in the country tells you that it's sorta big industry driven.”

TJW: If yes, how did you hear about this update?

See above (in being on Council).

TJW: What did this person/document say about the Water Quality Standards and human health criteria/fish consumption rate?

NA. See above.

TJW: Do you agree?

NA. See above.

TJW: If no, [then provide brief background {see below}] what is your perspective on this issue?

“Well, it's a tough position to be in, for sure. It's definitely not protecting public health because Puget Sound is so dirty that they couldn't even clean it up, you know. The fish consumption rate is just ridiculously low, it's not even close to what reality is. So, you're definitely doing it to determine how much pollutants or discharge that industries can dump. But they've got to be able to operate still. I mean that's the economy for the state. That's what he's got to do, that's what he's messing with, do I destroy my economy to protect public health or do I protect public health? It's a tough position to be in. It's kinda like us with profit with the fishermen's wage. There's a balance that has to be made. But you have to make this. It's a tough decision and that's why he's elected the governor, no one said it's going to be an easy job.”

TJW: Do you think that there is a need for higher water quality standards in Washington State?

“There is, definitely. I mean, yah. I've read things about Puget Sound, that you couldn't clean it up in a thousand years if you stopped dumping today, it's so bad. And that's not good for the environment. Even land based environmental issues occur because of what's in the water. The oceans and everything works together, the climate. Eating things that come out of Puget Sound is not healthy because there's a lot of fish and shellfish and octopus, all kinds of things, that are caught in Puget Sound that people eat, and it's kinda scary.”

TJW: What do you see as potential barriers to higher water quality standards in Washington State?

“Well, it's industry, of course. And it's that balance. To try to allow them to operate. I suppose it will just cost them more money, to try to put in filters or whatever they need to do to clean up their discharges. So, expensive. You know, once it's done, it's a short term pain they have to go through. Once it's done, it's done. Nobody likes to write that one big check to get... But we had to do that here to get our BRC certification, it cost a lot of money, you got to update your plant. If you want to do business, then that's what you got to do.”

[TJW Additional prompt: Just the price of business?]

“The price of business.”